Government of Bombay
Public Works Department

Irrigation Administration Report

Province of Bombay

Part I

For the Year 1940-41

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BOMBAY
PRINTED AT THE GOVERNMENT CENTRAL PRESS
1942

MAP OF THE PROVINCE OF BOMBAY

TO ACCOMPANY THE IRRIGATION ADMINISTRATION REPORT FOR 1940-41

SCALE 40 MILES TO 1 INCH



NORTHERN CIRCLE

AHMEDABAD DIVISION

AHMEDABAD DISTRICT

Works in Operation

1. Hathmati Canal
2. Bokh Reservoir
3. Timba Tank
4. Odhav-Sogam Drain
5. Panar Dediasan Drainage
6. Viramgam Drainage
7. Narsingpur Drainage
8. Hebatpur Drain
9. Khari Cut
10. Chekhla Drain
11. Ghoda Feeder
12. Ogan Drain
13. Godhavi Goraj Drain
14. Chandola Tank
15. Vasai Reservoir
16. Bhayla Feeder
17. Eastern and Western Drainage at Dholka

KAIRA DISTRICT

Works in Operation

18. Khari Sluices
19. Gobhlaj Tank
20. Galki Tank
21. Bherai Reservoir
22. Naika Reservoir

KAIRA AND PANCH MAHALS DIVISION

PANCH MAHALS DISTRICT

Works in Operation

1. Pania Tank
2. Warod Sapoi Tank
3. Mandelao Tank
- *4. Suki River Project
5. Muwalia Tank
6. Futelao Tank
7. Garbada Tank
8. Chharchhora Ambli Tank
- *9. Rajayata Wandeli Tank
10. Dangaria Tank
- *11. Orwada Tank
12. Boridra Tank
- *13. Guneli Tank
14. Ratneshwar Tank
- *15. Kanelao Tank
16. Malao Tank
- *17. Wada Talao Tank

KAIRA DISTRICT

Works in Operation

18. Wangroli Tank
19. Matewal Tank
20. Savli Tank
21. Phudsar Tank
22. Saiat Tank
23. Matar Drain
24. Tranja Tank
25. Nagrama Tank
- *26. Pariej Tank
27. Tarapur Gorad Drain
28. Karamsad Drain
29. Anand Mogri Drain

Note:—
Incomplete Works marked thus •

SURAT AND BROACH DIVISION

(I) BROACH DISTRICT

Works in Operation

1. Channel from Uber Vile to meet Channel near Daba
2. Nobar-Umra-Kotasar Drainage Channels
3. Namdhana-Nabar Drainage Channel
4. Bund at Dehej
5. Sindhav Drainage Channel
6. Kora-Madapher-Jantran Drainage Channel
7. Amanpur Nadiad Drainage Channel
8. Bund between Nada and Devla Villages
9. Bund at Nada Village
10. Bund at Islampur
11. Ghamnad Drainage Channel including Danda and Shimaltha
12. Wansetta Drainage Channel
13. Asarsa Reclamation Bund
14. Ninum Channel
15. Protective Bund at Gandhar
16. Ora-Vichiad Badalpur Chal.
17. Rahad Channel
18. Kovan Itola Drainage Chal.
19. Bund at Aladar
20. Pakhajan Ambhel Channel
21. Waghusan Drainage Chal.
22. Wansi Channel
23. Protective Bund at Harinagar
24. Protective Bund at Kadodra
25. Samadhpur Paniadra Chal.
26. Nadida-Akhod Channel
27. Bund at Suva
28. Joiva Channel
29. Protective Bund at Lakhigam
30. Asta Channel
31. Hansot Reclamation Bund
32. Adol Hajat Channel

(II) SURAT DISTRICT

Works in Operation

33. Morthan Channel
34. Bund between Kapasi and Kundiana Villages
35. Waghrej Protective Works

CENTRAL CIRCLE

POONA DIVISION

POONA DISTRICT

Works in Operation

1. Shirsuphal Tank
2. Bhadalwadi Tank

SATARA DIVISION

SATARA DISTRICT

Works in Operation

1. Krishna Canal
2. Rewari Canal
3. Mayani Tank
4. Upper Man River Works Pingli Tank
5. Yerla River Works Nehr Tank
6. Chikhli Canal

Incomplete Work

7. Goregaon Tank

SHOLAPUR DIVISION

SHOLAPUR DISTRICT

Works in Operation

1. Ekruk Tank
2. Ashti Tank
3. Pathri Tank
4. Wadshivne Tank
5. Koregaon Tank
6. Mhaswad Tank and Nira Right Bank Canal Branch III from mile No. 101 to 105¼

Incomplete Works

7. Budhihal Tank
8. Hotgi Tank
9. Mangi Tank

NASIK DIVISION

Works in Operation

1. Khirdi Sathe Tank
2. Parsul Tank

KHANDESH DIVISION

WEST KHANDESH DISTRICT

Works in Operation

1. Mukti Tank
2. Talwada Tank
3. Tapti River Minor Tributaries
4. Upper Panjhra River Group
5. Lower Panjhra River Group
6. Burai River Group
7. Kan River Group

Incomplete Work

8. Parmapada Tank

EAST KHANDESH DISTRICT

Works in Operation

9. Jamda R. B. Canal
10. Jamda L. B. Canal
11. Mhaswa Tank
12. Hartala Tank

DECCAN IRRIGATION CIRCLE

NASIK IRRIGATION DIVISION

NASIK DISTRICT

Works in Operation

1. (D. I. C.) Waghad Tank
2. (D. I. C.) Chankapur Tank
3. Girna Canal
4. Palkhed Canal
5. Wadali Canal
6. Ojhar Tambat Canal
7. Girna Group
8. Aram Group
9. Mosam Group
10. Godavari Group
11. Kadwa Group
12. Darna Group
13. Deo Group
14. Mahalungi Group
15. Darna Reservoir (Lake Beale)
16. Godavari R. B. Canal (from mile 0 to 35)
17. Godavari L. B. Canal (from mile 0 to 20½)

(Work under Construction-Incomplete Work)

18. Odal Tank

AHMEDNAGAR DISTRICT

Works in Operation

19. Godavari R. B. Canal (from mile 35 to 69)
20. Godavari L. B. Canal (from mile 20½ to 48)

AHMEDNAGAR DIVISION

AHMEDNAGAR DISTRICT

Works in Operation

1. Wilson Dam (Lake A. Hill)
2. Pravara R. B. Canal
3. Pravara L. B. Canal
4. Lakh Canal
5. Bhatodi Tank
6. Khuntephal Tank
7. Pimpalgaon Tank
8. Visapur Tank

POONA IRRIGATION & RESEARCH DIVISION

POONA DISTRICT

Works in Operation

1. Lake Fife
2. Mutha R. B. Canal
3. Mutha L. B. Canal
4. Matoba Tank
5. Kasurdi Tank

Incomplete Works

6. Khamgaon Tank
7. Warvand Tank

NIRA CANALS DIVISION

POONA DISTRICT

Works in Operation

1. Lloyd Dam at Bhatgar (New Lake Whiting)
2. Nira R. B. Canal (from mile 0 to 11½)
3. Nira L. B. Canal
4. Shetphal Tank

SATARA DISTRICT

5. Nira R. B. Canal (from mile 11½ to 47)

SHOLAPUR DISTRICT

6. Nira R. B. Canal (from mile 47 to 100)

Incomplete Work

7. Bhamburdi Tank

SOUTHERN CIRCLE

BELGAUM DIVISION

BELGAUM DISTRICT

Works in Operation

1. Gokak Canal—1st Section and Storage Works
2. Gadikeri Tank

BIJAPUR DIVISION

BIJAPUR DISTRICT

Work in Operation

1. Muchkundi Tank

DHARWAR DIVISION

DHARWAR DISTRICT

Works in Operation

1. Dambal Tank
2. Medleri Tank
3. Madag Tank
4. Asundi Tank
5. Dharma and Naregal Canals

KANARA DIVISION

KANARA DISTRICT

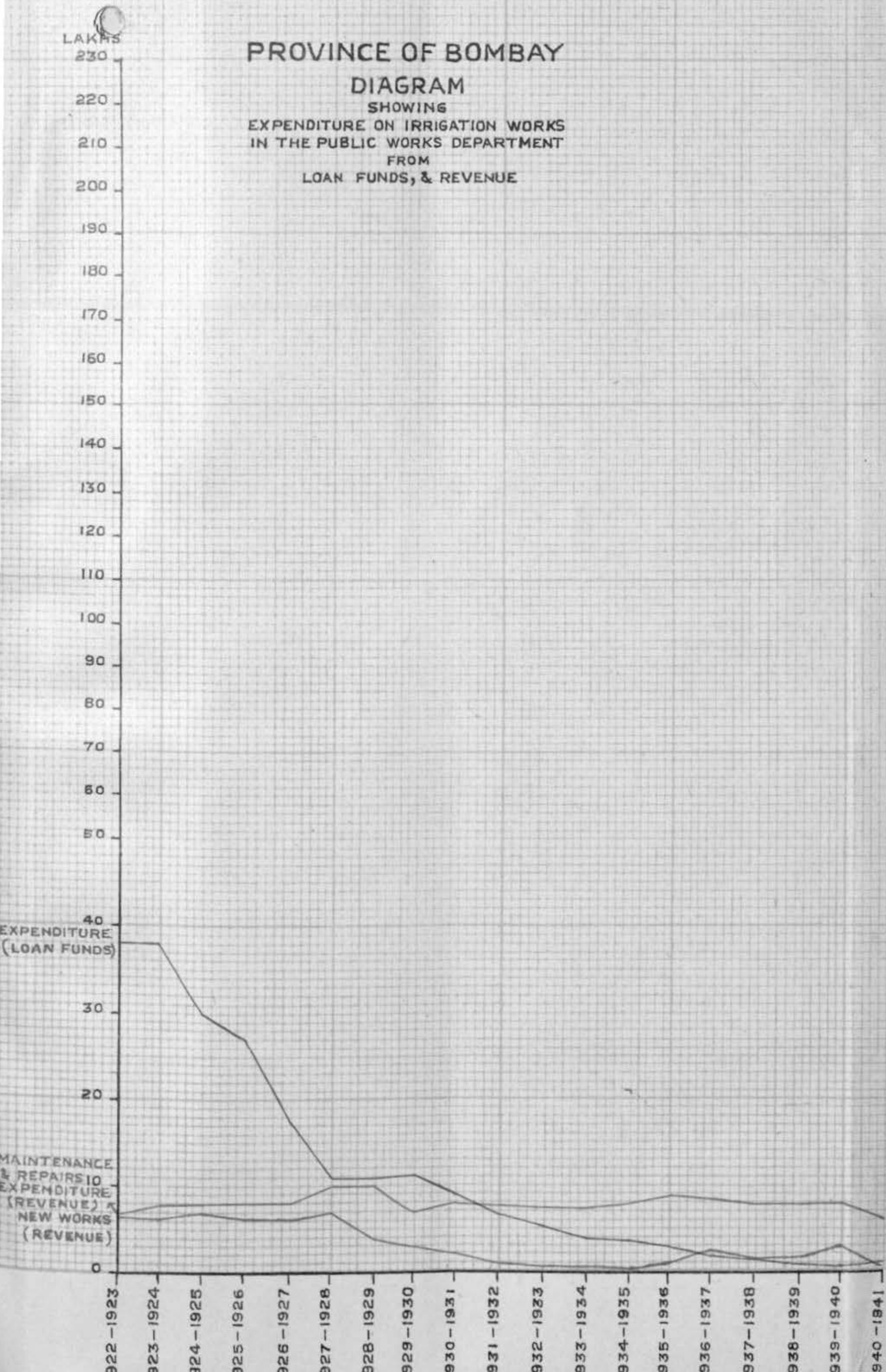
Work in Operation

1. Mavinkop Tank

PROVINCE OF BOMBAY

DIAGRAM

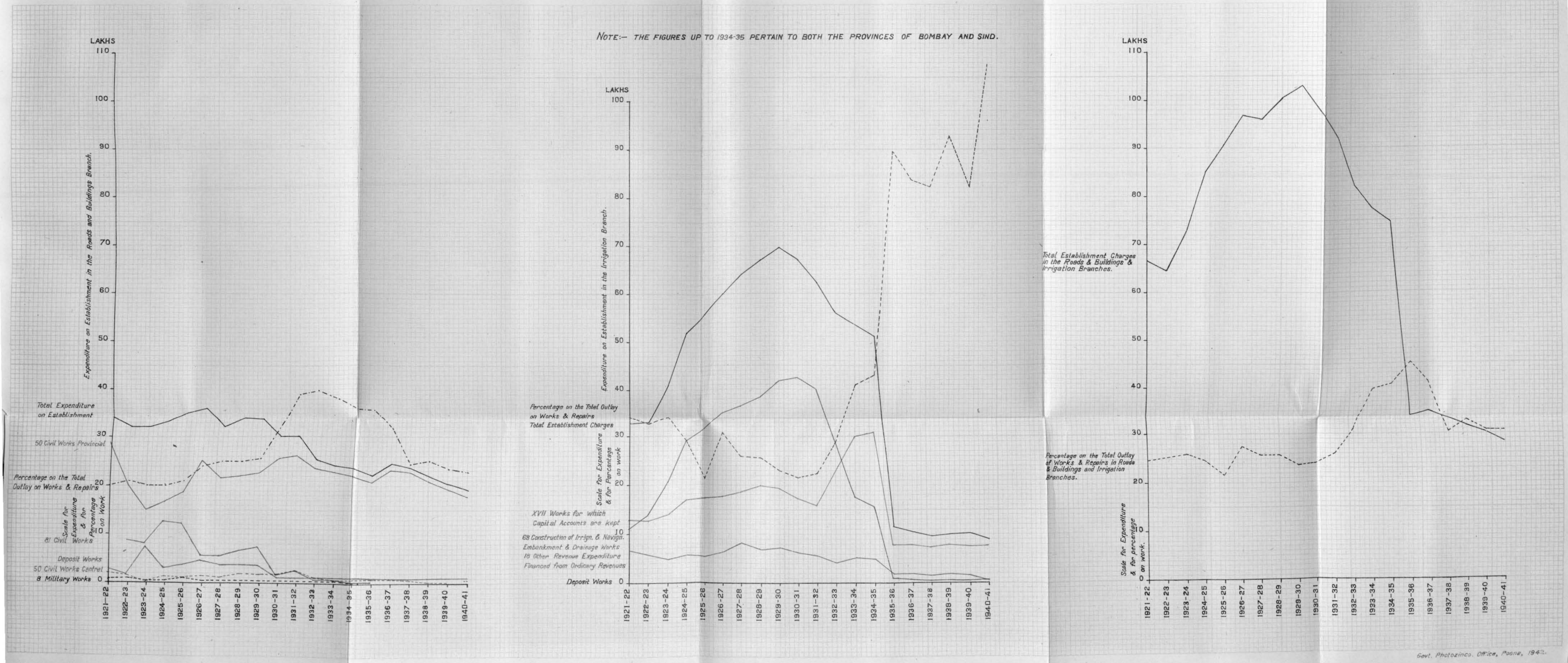
SHOWING
EXPENDITURE ON IRRIGATION WORKS
IN THE PUBLIC WORKS DEPARTMENT
FROM
LOAN FUNDS, & REVENUE



G.P.Z.P. POONA, 1942.

PROVINCE OF BOMBAY

DIAGRAM SHOWING EXPENDITURE ON ESTABLISHMENT IN THE ROADS & BUILDINGS & IRRIGATION BRANCHES OF THE PUBLIC WORKS DEPARTMENT AND PERCENTAGE TO THE TOTAL OUTLAY ON WORKS AND REPAIRS.



Govt. Photozinco. Office, Poona, 194[illegible].

IRRIGATION ADMINISTRATION REPORT, PROVINCE OF BOMBAY, PART I

1940-41.

PHYSICAL FEATURES—GENERAL DESCRIPTION OF IRRIGATION.

The area under irrigation in the Province of Bombay is not compact. Rainfall is available for agricultural operations but is often precarious. Tanks and canals provide irrigation for valuable crops such as sugarcane and also provide a source of supply to other crops when the rainfall is deficient or irregular. The old irrigation works consist chiefly of a few small canals and moderately large tanks, some 12,000 smaller tanks mostly in the southern part of the Province and in Gujarat, and of about 400 bandharas in Nasik and Khandesh districts. The tanks have earthen dams and the larger ones irrigate areas up to 1,300 acres, and the smaller ones up to 500 acres, situated immediately below the dams. The chief crop irrigated is rice. The bandharas are masonry weirs built across rivers to head up the water to a level sufficient to irrigate lands on the banks of the streams by means of channels taking off from the flanks of the bandharas. The areas irrigated are up to 800 acres and the chief crops are sugarcane, wheat, bajri and gram. From these small beginnings have evolved the magnificient irrigation works, which now form such a conspicuous feature in the Deccan and have so successfully fulfilled their beneficient purpose in banishing the famines which formerly devastated this portion of the Province.

2. The irrigation works in the Deccan are fundamentally different from those in Sind, the Punjab, Egypt or Mesopotamia, where wide alluvial plains have been formed by great deltaic rivers in perennial flow. The Bombay Deccan consists of a sloping table-land running eastward from the ridge of the Western Ghats. These form a ridge running parallel to the sea-coast at a distance from it of 50 to 100 miles ; precipitous on the western side, they fall away more gradually to the east. The heaviest rainfall occurs on the peak of the ridge, where anything up to 270 inches of rain is recorded in the four monsoon months. The intensity of the rainfall rapidly decreases as we go eastward from the highest ridge, reaching a figure of 20 or 25 inches at a distance of 100 or 150 miles east of the Ghats. The rivers in the Deccan rise in the valleys close to the ridge, flow in an eastward direction, and are dry or practically so for 7 or 8 months of the year. The line of the Ghats, like the ridge of a roof, divides the rainfall into two parts ; one the smaller portion falling westward into the Indian Ocean, and the other flowing through long lengths of tortuous rivers to the east and joining the rivers, which reach the sea on the south-eastern coast of the peninsula. These rivers are in flow during the

monsoon months only, and if no artificial means of conserving their waters were provided, the whole monsoon rainfall would be wasted so far as the Bombay Deccan is concerned, and would simply flow away to the sea benefiting but to a small extent the country traversed.

3. The large irrigation systems in the Deccan are all of the same type. Each depends upon a storage lake near the head of one of the river valleys, where sufficient water is collected during the monsoon to supply the country on either side of the river valley below. The water stored during the rains is let out during the dry months of the year in accordance with requirements ; and at a point on the river, which may be as far as 50 miles from the main storage lake, a "pick-up-weir" is constructed across the river-course to divert the water into canals which take off on either side of the weir. In one case only, that of Lake Fife at Khadakwasla near Poona, do the canals take off from the flanks of the dam itself. The canals are always constructed at a considerably flatter slope than that of the river, and consequently are able to diverge from the river itself on each side of the valley ; as a rule each canal only irrigates the area between itself and the river.

SECTION I.

COMPRISING IRRIGATION WORKS FOR WHICH CAPITAL AND REVENUE ACCOUNTS ARE KEPT.

GENERAL REMARKS.

Works in operation

4. The following list includes all the works in operation (43 in number) :—

Serial No	Name of Work	Area of four months' crops which could be irrigated in normal years with a duty at the head of the canal of 120 acres for the monsoon and 120 acres for the rabi season per cusec	Whether supply is reliable or dependent on local rain	Whether storage works completed or proposed	Remarks
		Acres			
1	Hathmati and Khari Cut Canals.	24,000	Dependent on local rain.	No storage work. Bokh reservoir, Chandola tank and Wasai reservoir, completed.	The catchment of the Hathmati river is hilly, covered partly with forest and that of the Khari is undulating ground at its source and then plain ground with cultivated fields. The supply depends upon the flow in the rivers, and the contents of the Bokh reservoir, Chandola tank and Wasai reservoir.
2	Wangroli Tank ..	3,400	Do. ..	Completed ..	The catchment is ordinary plain ground and cultivated fields.
3	Savli Tank ..	3,000	Do. ..	Do. ..	Ordinary catchment on undulating ground.
4	Saiat Tank ..	2,000	Do. ..	Do. ..	Ordinary catchment on flat ground.
5	Tranza Nagrama Tanks.	800	Do. ..	Do. ..	The Tranza tank has no independent catchment. The Nagrama has a catchment of 1·59 sq. miles. Both are fed by the Matar drainage channel which is not reliable as it seldom flows.
6	Futelao Tank ..	800	Do. ..	Do. ..	Hilly catchment.
7	Nira Left Bank Canal including Shetphal Tank.	100,000	Reliable ..	Lake Whiting (Lloyd Dam) completed.	Ghat catchment.
8	Nira Right Bank Canal.	180,000	Do. ..	Do. ..	Do.
9	Mutha Canals including Matoba Tank.	49,000	Do. ..	Lake Fife: comleted.	Do.
10	Kasurdi Tank ..	40	Dependent on local rain.	Completed ..	Deccan catchment.

6. The financial results of the year by main heads were as under :—

—	Area irrigated.	Revenue realised.			Working expenses.	Net revenue.
		Direct receipts.	Share of land revenue.	Total.		
	Acres.	Rs.	Rs.	Rs.	Rs.	Rs.
Productive	6,591	1,78,132	9,414	1,87,546	31,159	1,56,387
Unproductive	3,03,369	39,47,794	11,226	39,59,020	14,66,877	24,92,143
Total ..	3,09,960	41,25,926	20,640	41,46,566	14,98,036	26,48,530

* Inclusive of 12,365 acres under consolidated assessment.

The gross revenue and the net revenue show increases of Rs. 7,59,625 and Rs. 7,16,928 respectively, as compared with the figures for the previous year.

Area irrigated, revenue, etc.

7. The figures of the area irrigated, the revenue assessed and realised and the working expenses, as compared with those of the previous three years, are given below :—

Year.	Area irrigated†	Revenue.		Working expenses.
		Assessment.	Realisations.	
	Acres.	Rs.	Rs.	Rs.
1937–38	320,006	33,83,235	32,35,895	16,26,519
1938–39	270,650	31,17,788	32,06,922	16,80,195
1939–40	304,889	40,39,667	33,86,941	14,55,339
Average ..	298,515	35,13,563	32,76,586	15,87,351
1940–41	309,960	43,66,341	41,46,566	14,98,036

† Inclusive of the area under consolidated water and land assessment.

8. The gross area under command is 1,764,000 acres. The area irrigable at present is 626,920 acres.

9. The state of Revenue collections was as follows :—

	Rs.	Rs.
Balance of demands unrealised at the commencement of the year		21,00,847
Demands of the year—		
Rabi, 1939–40	8,74,568	
Kharif, 1940–41	28,35,694	
Miscellaneous receipts ..	5,09,406	
		42,19,668
Total ..		63,20,515
Deduct—		
Remissions		17,780
Net total ..		63,02,735
Amount unrealised at the close of the year		21,69,411
	Rs.	
Actual receipts of the year	41,33,324	
Add—		
Share of land revenue ..	20,640	
		41,53,964
Deduct—		
Refunds of revenue		7,398
Revenue realised		41,46,566

The remissions and refunds together amounted to Rs. 25,178.

Unrealised irrigation revenue at the close of the year amounted to Rs. 21,69,411 which is made up as follows :—

	Rs.
Ekruk Tank	5,421
Hathmati and Khari Cut Canals	9,794
Bhadalvadi Tank	4,968
Krishna Canal	76,739
Lower Panjhra River Works	3,852
Yerla River Irrigation Works	4,938
Mutha Canals and Matoba Tank	1,70,776
Gokak Canal	31,510
Mhaswad Tank	29,923
Jamda Canals	12,907
Nira Left Bank Canal and Shetpal Tank	4,43,660
Chankapur Tank—Girna Canal	73,248
Kadwa River Works	91,202
Godavari Canals	2,78,622
Nira Right Bank Canal	4,06,885
Pravara River Works	4,99,214
Other Works	25,752
Total ..	21,69,411

10. The working expenses of the year amounted to Rs. 14,98,036 as compared with Rs. 14,55,339 during the previous year. The following table compares the charges under the principal heads with those of the previous three years :—

Working expenses.

—	1937–38	1938–39	1939–40	1940–41
	Rs.	Rs.	Rs.	Rs.
Works	1,44,956	1,37,680	11,949	47,841
Repairs	5,80,762	5,78,687	5,91,355	5,83,283
Establishment	8,14,161	8,69,198	7,64,259	7,61,490
Tools and Plant	7,914	10,327	6,710	6,757
Total in the Public Works Department..	15,47,793	15,95,892	13,74,273	13,99,371
Collection charges	71,472	77,144	75,037	92,359
Indirect charges	7,254	7,159	6,029	6,306
Total working expenses ..	16,26,519	16,80,195	14,55,339	14,98,036

11. The following table gives the details of working expenses for some of the principal works :—

Details of working expenses.

Name of work.	Average incidence of water rate per acre.	Cost of measurement.		Working expenses in the Public Works Department.	
		Total cost.	Per acre.	Per mile of canal.	Per acre irrigated.
	Rs.	Rs.	Rs. a. p.	Rs.	Rs.
Nira Left Bank Canal and Shetphal Tank.	10·20	1,303	0 0 5	793	2·55
Pravara Canals	15·84	1,703	0 1 0	1,026	4·57
Girna Canal	11·74	630	0 0 10	1,396	4·58
Godavari Canals	19·18	1,908	0 1 0	1,159	7·09
Mutha Canals and Matoba Tank ..	8·26	1,139	0 1 0	615	5·62
Kadwa River Works	11·30	142	0 0 9	840	10·47
Nira Right Bank Canal	16·56	2,124	0 0 7	671	7·54
Krishna Canal	7·89	768	0 2 1	488	2·96
Yerla River Irrigation Works ..	5·42	311	0 1 3	359	2·99
Upper Man River Works ..	5·02	65	0 1 0	426	7·44
Maini Tank	4·58	73	0 0 10	508	3·22
Jamda Canals	5·23	45	0 0 6	131	10·73
Ekruk Tank	5·67	266	0 1 4	445	6·04
Ashti Tank	4·79	123	0 0 7	591	4·32
Mhaswad Tank	4·95	59	0 0 5	913	8·97
Gokak Canal	5·49	630	0 1 0	268	1·42
Dharma Canal	5·17	243	0 9 3	112·38	0·34
Dambal Tank	4·04	....	....	1070·34	11·18
Medleri Tank	7·33	....	....	125·0	7·66
Madag Tank	4·50	....	....	462·44	8·62
Asundi Tank	5·70	....	....	195·47	2·68
Hathmati and Khari Cut Canals ..	2·09	No separate establishment was maintained		665	804·86

12. The gross assessed revenue, direct and indirect, amounted to Rs. 43,66,341 as compared with Rs. 40,39,667 in the previous year. The details of the gross assessment are as under :—

Gross assessed revenue.

—	Direct revenue.			Indirect revenue.	Total.
	Water rate.	Other receipts.	Total.		
	Rs.	Rs.	Rs.	Rs.	Rs.
Productive	26,019	1,49,032	1,75,051	9,414	184,465
Unproductive	38,10,276	3,30,885	41,70,650	11,226	41,81,876
Total ..	38,36,295	4,79,917	43,45,701	20,640	43,66,341

The net assessed revenue of the year, after deducting working expenses (Rs. 14,98,036), amounted to Rs. 28,68,305 as compared with Rs. 25,84,328 during the previous year.

13. The following table gives the percentage return earned during the year on capital outlay on the principal works in operation :—

—	Total capital outlay (direct and indirect).	Gross receipts (direct and indirect).	Working expenses (direct and indirect).	Net Revenue.	Percentage return on capital outlay.
	Rs.	Rs.	Rs.	Rs.	Rs.
Ekruk Tank	13,40,386	170,555	21,381	1,49,174	11·13
Hathmati and Khari Cut Canals ..	13,18,729	8,712	34,609	−25,897	
Nira Left Bank Canal and Shetphal Tank	1,46,84,633	7,41,317	1,89,542	5,51,775	3·76
Nira Right Bank Canal ..	4,12,07,105	6,76,160	3,42,459	3,33,701	0·81
Mutha Canals and Matoba Tank ..	70,19,578	4,07,370	1,05,838	301,532	4·30
Godavari Canals	1,06,41,121	6,63,552	2,71,270	3,92,282	3·69
Chankapur Tank—Girna Canal ..	20,72,801	1,72,708	54,397	1,18,311	5·71
Kadwa River Works	10,35,876	41,793	32,233	9,560	0·92
Pravara River Works	1,50,95,791	9,02,612	2,66,827	6,35,785	4·21
Mhaswad Tank	20,96,016	51,751	22,776	28,975	1·38
Lower Panjhra River Works ..	4,68,621	27,056	3,636	23,420	5·00
Krishna Canal	9,49,807	65,596	17,213	48,383	5·09
Gokak Canal	14,72,174	62,828	13,876	48,952	3·33

14. The average water rates per acre of land actually irrigated were :—

		Rs.
Productive works	.. .. ..	5·80
Unproductive works	.. .. ..	12·99

15. The water rate assessments and other receipts compare with those of the previous year as under :—

		1939-40.	*1940-41.*
		Rs.	Rs.
Water rates	.. .. ..	34,44,134	38,36,295
Other receipts—			
Plantations	.. .. ..	7,388	7,982
Water power	.. ..	15,145	21,035
Miscellaneous	.. ..	5,51,499	480,389
Total	..	5,74,032	5,09,406
Share of land revenue	.. ..	21,501	20,640
Grand Total	..	40,39,667	43,66,341

16. The principal crop acreages irrigated during 1939–40 and 1940–41 are given below :—

Crop acreages.

		1939-40.	*1940-41.*
		Acres.	Acres.
Garden and orchards	.. ..	7,865	8,545
Sugarcane	.. .. ..	63,450	74,642
Wheat	.. .. ..	11,424	9,118
Rice	.. .. ..	4,073	4,325
Jowar	.. .. ..	65,750	66,624
Bajri	.. .. ..	11,644	18,149
Gram, etc.	.. .. ..	11,465	9,604
Groundnut	.. .. ..	14,465	16,932
Cotton	.. .. ..	12,943	6,151
Condiments	.. .. ..	7,217	6,487

The total estimated value of the crops irrigated was Rs. 302·16 lakhs as compared with Rs. 396·14 lakhs during the previous year.

DETAILED REPORTS BY LOCAL OFFICERS.

NORTHERN CIRCLE.

The year under review was marked by a poor monsoon which broke in the first week of June and ended by the middle of September. The rainfall was much below normal and of low intensity with the result that it was inadequate for rice crops and for storage. There was very little run-off from the catchments of the rivers. The little flow in the Hathmati River was utilised in filling up the reservoirs and tanks and for rice irrigation. The transplanted area could not be protected fully by canal water. The total area protected by irrigation under the Hathmati and Khari Cut Canals including the area in the Kalambandhi villages of the Khari sluices system was about 43 acres.

The rainfall gauged at Ahmedabad and at Prantij was 18·02 and 21·38 inches, respectively, as compared with 26·61 and 25·75 inches, the average precipitation, respectively, of the last three years. Similarly at Bareja, which is situated in the centre of the area irrigated by the Khari Cut Canal, the rainfall was 19·96 inches as compared with 25·15 inches, the average of the last three years. At Himatnagar, where the Head Works of the Hathmati Canal are situated, it was 20·73 inches as compared with 32·19 inches, the average of the past three years.

The principal irrigation works in operation in this Circle are (1) the Hathmati and Khari Cut Canals, (2) the Wangroli Tank, (3) the Savli Tank, (4) the Saiat Tank, (5) the Tranza-Nagrama Tanks and (6) the Futelao Tank.

No. (1) is a work which includes the Bokh Storage Reservoir with a capacity of 300 million cubic feet of water and several small tanks with small independent catchments depending on local rainfall. The other works are storage tanks all depending on local-rainfall.

The six works are financially unproductive, as the annual revenue is not sufficient to cover the working expenses.

AHMEDABAD AND KAIRA AND PANCH MAHALS DIVISIONS.

HATHMATI AND KHARI CUT CANALS.

This is the most important canal system in Gujarat. The Hathmati Canal irrigates a tract of land lying between the Sabarmati and Khari rivers and this system in addition to irrigating the area dependent on it, is designed to pass surplus water, when available, first into the Bokh Reservoir and then into the Khari River direct via the Bhujwa Channel. The Bokh Reservoir does not provide any direct irrigational supplies but only acts as a storage reservoir for the Khari Cut Canal. Further downstream on the Khari River are situated two small irrigation systems

and these utilise the natural flow of the river and also any surplus water which can be made available from the Hathmati canal ; the Khari water is abstracted at the so-called "Khari Sluices" for direct irrigational purposes, while the surplus water from the Hathmati is diverted through an artificial cut called "the Khari Cut" into a natural channel and this in its turn supplies a system of distributaries, several small tanks and the large Chandola Tank situated near Ahmedabad. The system was first opened in 1873–74 and has cost more than Rs. 13 lakhs.

The Hathmati River was not in floods due to poor rainfall in the catchment of the river. The area irrigated under this canal was 23 acres in the Kharif season and 20 acres in the Rabi season. The average daily discharge admitted into the canal at its head during the Kharif season was 25 cusecs of which quantity only 12 cusecs were utilised for irrigation carried out under the canal, the balance being let down into the Bokh Reservoir. During the Rabi season no discharge was obtained from the river.

The Khari River rose in flood moderately 4 times during the season. The floods were of short duration and of little volume. The flood waters were dealt with according to the terms of the provisional agreement in force this year. Under this canal no area was irrigated in the Kharif and Rabi seasons.

The area irrigated, the revenue assessed and the working expenses in connection with the Hathmati and Khari Cut Canals compare with the average of the three preceding years as under :—

Year.	Kharif.		Rabi.		Total.		Working expenses
	Area irrigated.	Assess-ment.	Area irrigated.	Assess-ment.	Area irrigated.	Assess-ment.	
	Acres.	Rs.	Acres.	Rs.	Acres.	Rs.	Rs.
Average	7,365	37,117	1,517	4,340	8,882	41,457	36,745
1940–41	23	53	20	37	43	90	34,609

No remissions were sanctioned during the year. The gross revenue realised from all sources amounted to Rs. 8,664 while the working expenses were Rs. 34,609. These figures show a net loss of 1·96 per cent. on the total capital outlay of Rs. 13,18,729.

First Class Irrigation Tanks in Gujarat.

The five first class tanks, viz. Wangroli, Savli, Saiat, Tranza-Nagrama and Futelao were constructed between the years 1904 and 1917 at the aggregate cost of Rs. 11 lakhs. They rarely yield any net return, as the demand for water from them is small in years of good rainfall, whereas in years of scarcity the tanks themselves store deficient supplies. The first four tanks are situated in Kaira Collectorate, while the last one is in the Broach and Panch Mahals Collectorate.

The area irrigated, the revenue assessed and the working expenses in connection with the tanks during the year are compared with the average of the preceding three years as below :—

Name of tank.	Year.	Kharif.		Rabi.		Total.		Working expenses.
		Area irrigated.	Assessment.	Area irrigated.	Assessment.	Area irrigated.	Assessment.	
		Acres.	Rs.	Acres.	Rs.	Acres.	Rs.	Rs.
Wangroli ..	Average ..	1,157	5,373	199	787	1,356	6,160	6,429
	1940-41 ..	933	4,609	..	..	933	4,609	6,927
Savli	Average ..	1,013	5,011	..	..	1,013	5,011	5,197
	1940-41 ..	725	3,575	..	..	725	3,575	5,558
Saiat	Average ..	358	1,408	42	172	400	1,580	3,119
	1940-41 ..	583	2,294	..	..	583	2,294	3,372
Tranza-Nagrama ..	Average ..	2	5	7	14	9	19	1,792
	1940-41 ..	..	..	3	6	3	6	1,717
Futelao	Average ..	50	111	114	345	164	456	4,665
	1940-41 ..	40	40	49	154	89	194	1,153

Wangroli Tank.

The rainfall gauged at the site of the tank was 30·31 inches. The tank was partially filled and the water was utilised in irrigating Kharif crop mainly of rice. The miscellaneous revenue realised during the year amounted to Rs. 1,812 compared with Rs. 959 received during the previous year. No remissions were granted during the year.

Savli Tank.

The rainfall gauged at the site of the tank was 22·47 inches. The tank was poorly filled and the water was utilised in irrigating Kharif crops only mainly rice. The miscellaneous revenue realised amounted to Rs. 1,016 compared with Rs. 740 received during the previous year. No remissions were granted.

SAIAT TANK.

The rainfall gauged at the site of the tank was 26.15 inches. The tank was partly filled and the water was utilised in irrigating Kharif crops mainly of rice. The miscellaneous revenue realised amounted to Rs. 1,299 compared with Rs 686 received in the previous year. No remissions were granted during the current year.

TRANZA-NAGRAMA TANKS.

The rainfall gauged at Tranza-Nagrama was only 13·39 inches. The tanks did not fill during the year and there was practically no irrigation during the year. The miscellaneous revenue realised amounted to Rs. 2,361 compared with Rs. 60 received in the previous year.

FUTELAO TANK.

The rainfall gauged at the site of the tank was 21·44 inches during the year. The tank was filled to F. S. L. and some irrigation was done during Kharif and Rabi seasons. Although the supply of water was sufficient, the reason for less irrigation as compared with the storage of water in the tank is that the Bhills in this area are very poor and illiterate to take sufficient advantage of the water available by way of irrigation. The miscellaneous revenue realised amounted to Rs. 76 compared with Rs. 102 received in the previous year.

The percentage returns obtained during the year from the working of these tanks are shown below :—

Name of Tank.	Gross assess-ment.	Gross realisa-tion.	Less working expenses.	Net revenue.	Capital outlay—direct and indirect—to end of 1940-41.	Percent-age of return.
	Rs.	Rs.	Rs.	Rs.	Rs.	
Wangroli	6,421	6,757	6,927	—170	2,93,295	
Savli	4,591	3,744	5,558	—1,814	2,55,210	
Saiat	3,593	1,948	3,372	—1,424	1,84,029	
Tranza-Nagrama ..	2,357	2,373	1,717	+656	2,80,635	·23
Futelao	265	466	1,153	—687	1,16,461	

DECCAN IRRIGATION CIRCLE.

The rainfall during the year under report was generally satisfactory on all the Canals in this Circle.

The general condition of the irrigated crops was satisfactory throughout the year. The Gul rates throughout the year were low.

SUGAR FACTORIES.

The following ten sugar factories have been established on the Deccan Canals and the acreages for which water is guaranteed at present is noted against each :—

Name of sugar factory.	Annual guarantee of water supply for areas of sugarcane.	Capacity in tons per day.
	Acres.	
1. The Belapur Company, Harigaon, Pravara Left Bank Canal.	3,050	650
2. The Maharashtra Sugar Mills, Limited near Belapur, Pravara Left Bank Canal.	4,250	1,000
3. Messrs. Marsland Price and Company, Limited at Kalamb, Nira Left Bank Canal.	3,500	1,250
4. The Phaltan Sugar Works, Limited near Tadwali, Nira Right Bank Canal.	2,500	500
5. The Saswad Mali Sugar Factory, Limited near Akluj, Nira Right Bank Canal.	1,600	450
6. The Ravalgaon Sugar Farm, Limited near Ravalgaon, Girna Canal.	1,400	600
7. The Brihan Maharashtra Sugar Syndicate, Ltd. on Nira Right Bank Canal.	1,600	350
8. Belwandi Sugar Farm near Visapur, Visapur Canal.	No guarantee in respect of area is given but ¾th of the water available in the Visapur tank is guaranteed annually.	250
9. Godavari Sugar Mills, Limited on Godavari Right and Left Bank Canals.	2,850	650
10. Shree Changdeo Sugar Mills, Ltd. on the Godavari Right Bank Canal.	1,000	Sugar factory under erection.

The areas of sugarcane planted by the sugar factories during the year were 25,000 acres.

A number of drainage projects to save lands from damage due to intensive cultivation of sugarcane by Sugar Companies has been prepared and construction work of some of these schemes in various sugar factory areas was in progress during the year.

The total area irrigated in the Deccan Irrigation Circle during the year was 250,912 acres as compared with 247,145 acres during the previous year and the gross revenue amounted to Rs. 38·11 lakhs as compared with the figure of Rs. 35·07 lakhs for the previous year.

NIRA CANALS DIVISION.

LLOYD DAM AT BHATGAR AND NIRA RIGHT BANK CANAL.

The Nira Right Bank Canal is the largest canal in the Deccan. The original estimate of the project framed in 1910 provided for :—

(1) The raising of the Dam at Bhatgar by 60 feet in order to increase its storage capacity from 5,300 million cubic feet to 24,000 million cubic feet ;

(2) The construction of a canal 109 miles long on the right bank of the Nira river having a capacity of 1,500 cusecs at head ; and

(3) The enlarging of the existing Nira Left Bank Canal in order to increase its discharge from 450 to 760 cusecs.

The total cost was estimated at about Rs. 258 lakhs and the area to be irrigated annually at 190,000 acres. The project was submitted to the Government of India in May 1911, sanctioned by the Secretary of State in June 1912 and the work was started in the same year. Before the work of raising the Bhatgar Dam was commenced, however, it was decided for technical reason to build an entirely new dam. Owing to this change and to the unprecedented rise in the cost of labour and materials due to the Great War, a revised estimate amounting to Rs. 491 lakhs was framed in 1920 and submitted to the Government of India in September 1921. The revised project provided for :—

(1) The construction of a new dam at Bhatgar designed to increase the storage from 5,300 million cubic feet to 24,000 million cubic feet ;

(2) The construction of a canal 106½ miles long on the right bank of the Nira river ; and

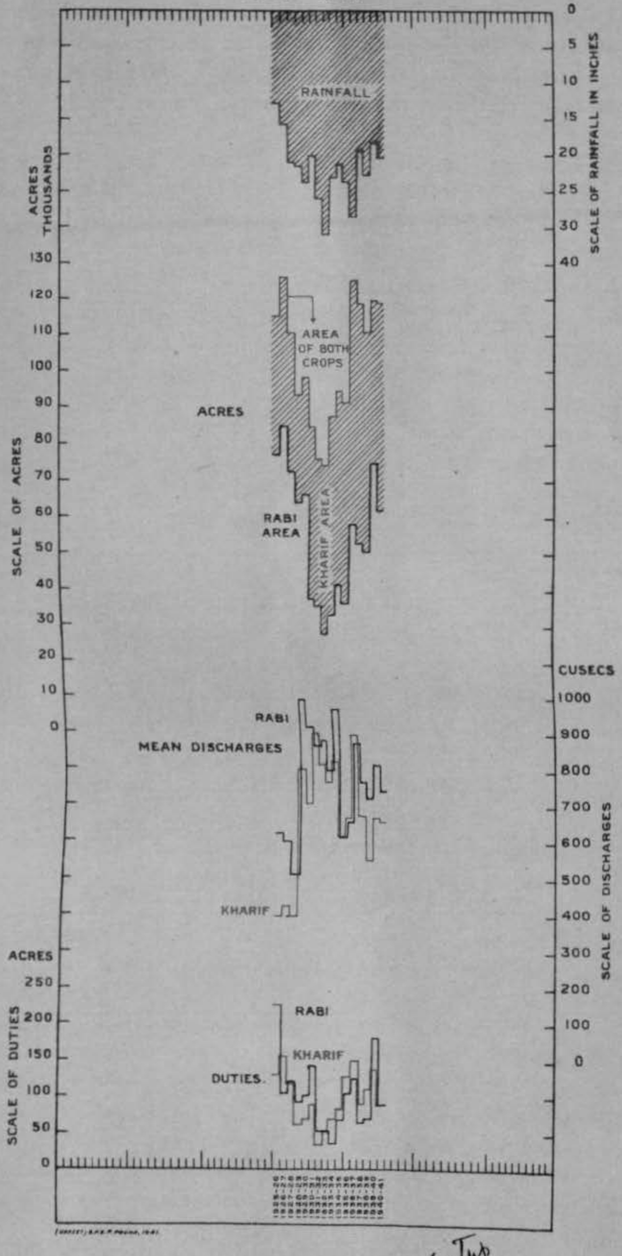
(3) The enlargement of the Nira Left Bank Canal, including the expenditure of Rs. 3¾ lakhs already incurred on widening the Nira Left Bank Canal.

It was anticipated that 132,000 acres would be irrigated annually as a result of this scheme and that the gross revenue would amount to Rs. 15·22 lakhs and the net revenue to Rs. 11·92 lakhs yielding a return of 2·4 per cent. on the capital outlay. The revised project was sanctioned by the Secretary of State in June 1922.

The Lloyd Dam at Bhatgar, 190 feet high, 5,333 feet long including the waste weir (4,266 feet long excluding the waste weir) and 124 feet wide at the base, was completed in 1928 at a cost of Rs. 172 lakhs. It is one of the largest dams in the world and contains 21½ million cubic feet of masonry. The lake formed by the construction of the dam has a length of 17 miles at full supply level with a corresponding storage capacity of 24,000 million cubic feet. The catchment area is 128 square miles in extent with an annual rainfall varying from 250 inches in the Ghats to 40 inches at Bhatgar. In addition to the sluices required for releasing water for irrigation purposes there are 81 waste weir gates for the control and regulation of the flood level in the lake.

The Nira Right Bank Canal has its head works at Vir, 17 miles from the Lloyd Dam. The designed discharges of the canal at head and at tail are 1,500 and 414 cusecs, respectively, the corresponding full supply

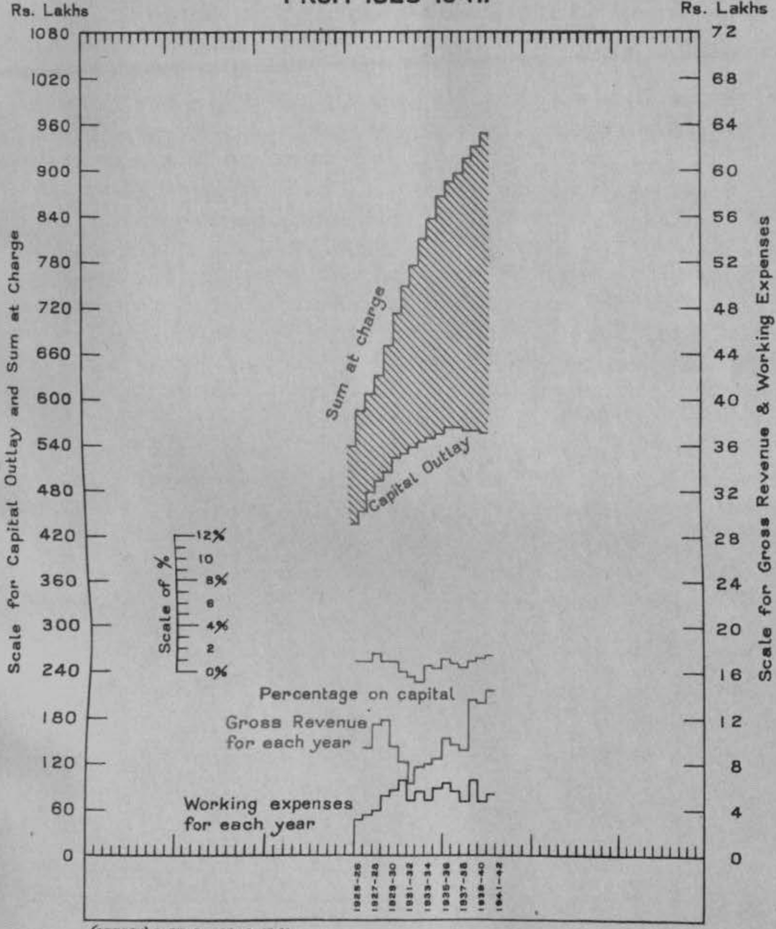
Working Record
for
Nira Right & Left Bank Canals
1925 – 1941



18-9-41.

EXECUTIVE ENGINEER
NIRA CANALS DIVISION.

NIRA CANALS DIVISION
FINANCIAL RECORD FOR NIRA RIGHT AND LEFT BANK CANALS FROM 1925-1941.



(OFFSET) G.PZ.P.POONA, 1941.

NOTE:—

THE INTERCEPTS BETWEEN THE TWO RED LINES SHOW ARREARS OF INTEREST UNPAID UP TO END OF EACH YEAR, WHICH BEING ADDED TO THE CAPITAL, GIVE SUM AT CHARGE. THE INTERCEPTS BETWEEN THE BLACK & RED LINES SHOW THE NET INCOME EACH YEAR.

[signature] 17-9-41.

EXECUTIVE ENGINEER
NIRA CANALS DIVISION

depths being 8·5 and 6·5 feet, respectively. The canal about 106½ miles in length commands lands situated in the Satara and Sholapur Districts and the Phaltan State. Water was first supplied from the canal for the irrigation of rabi crops in 1924–25. The works on the main canal are completed. The Lloyd Dam was completed in the year 1928 and the Nira Right Bank Canal Project was completed in the year 1937–38. There are 3 branches and 69 distributaries taking off from the canal, while the culturable area commanded by it is 448,000 acres. The water regulation and distribution works on the canal are constructed on modern lines and the latest types of Standing Wave Flume measuring devices are provided at distributary heads on the channels. The whole of the perennial area under the canal has been surveyed and the soil classification carried out before designing the channels, while the lands suitable for perennial and other crops have been classified by the Irrigation Research Division and shown on maps.

On the 1st April, the level of the water in Lake Whiting at Bhatgar was 95·80 feet (full supply level 143 feet) above the sill of the sluices, the corresponding contents being 8515·53 million cubic feet. The lowest level of 71·50 feet was reached on the 21st June, the corresponding contents being 3,250·92 million cubic feet. The lake began to fill subsequently and received replenishment up to its full supply level of 143 feet on the 3rd September. Full supply level was maintained till the 5th October, when the draw-off for irrigation purposes commenced. On the 31st March 1941 the water level was at 106·65 feet, the corresponding contents being 11,567 million cubic feet. The rainfall gauged at Bhatgar during the year was 45·63 inches, while the rainfall in the Nira Right Bank Canal tract averaged 17·37 inches and that on the Nira Left Bank Canal averaged 22·56 inches.

The following table gives the area irrigated, revenue assessed, etc., during the year as compared with the corresponding averages of the past three years :—

Area irrigated.		Water rates assessed.		Gross assessed revenue.	
1940–41.	Average.	1940–41.	Average.	1940–41.	Average.
Acres.	Acres.	Rs.	Rs.	Rs.	Rs.
45,459	41,654	7,53,810	4,75,747	7,68,673	4,96,105

Working expenses.		Realisations.		Rainfall.	
1940–41.	Average.	1940–41.	Average.	1940–41.	Average.
Rs.	Rs.	Rs.	Rs.	Inches.	Inches.
3,42,459	3,22,755	6,76,160	5,11,923	17·37	18·61

During the Kharif season of 1940-41 water from the Nira Right Bank Canal was issued for irrigation on Branch No. III to supplement water from the Mhaswad Tank. The area thus irrigated on Branch No. III during the year was 9,077 acres and gross assessed revenue amounted to Rs. 43,921.

The increase in the area irrigated and revenue was due to increase in cane area. The area under sugarcane was 17,287 acres as compared with 8,660 acres in the previous year. The areas of sugarcane blocks and two-season blocks were 6,041 acres and 8,946 acres as compared with 3,549 acres and 9,472 acres, respectively, in the previous year. The area of garden and fruit blocks totalled 112 acres as compared with 99 acres of the previous year. The remissions sanctioned during the year amounted to Rs. 1,348.

The cost of the measuring establishment employed was pies 7 per acre as against pies 5 of the previous year. The expenditure incurred on maintenance and repairs amounted to Rs. 1,25,664. The perennial section of the Nira Right Bank Canal extended up to mile 79.

NIRA LEFT BANK CANAL.

This canal forms part of the scheme known as the Nira Valley Development Project and irrigates lands situated on the left bank of the Nira river. It is one or the pioneer irrigation works in the Deccan and protects a tract in the Poona District, with a very precarious rainfall. The original scheme consisted of—

(*a*) A ghat-fed storage tank at Bhatgar (Lake Whiting) about 32 miles south of Poona on the Yelwandi river, impounding 5,300 million cubic feet of water;

(*b*) A pick-up-weir at Vir on the Nira river about 17 miles downstream from Bhatgar;

(*c*) A canal about 100 miles long irrigating about 80,000 acres annually; and

(*d*) The Shetphal Tank at the tail of the canal with an effective capacity of 592 million cubic feet for the purpose of storing a portion of the surplus monsoon discharge.

The original masonry dam at Bhatgar, 127 feet high has since been replaced by the higher Lloyd Dam mentioned above. The original works were commenced in 1881 and the canal came into operation in 1885-86. The canal originally had a capacity of 456 cusecs but it has now been remodelled to carry a discharge of 720 cusecs. The canal, together with the tank, commands a gross area of 201,000 acres while the area commanded by the Shetphal Tank itself is 23,500 acres. The culturable area under the canal is 149,821 acres.

NIRA VALLEY DEVELOPMENT PROJECT.

This project was designed for the complete development of irrigation in the Nira Valley. It provided, *inter alia*, for the widening and remodelling of the Nira Left Bank Canal in order that the canal should

irrigate an additional area of 19,000 acres of various types of crops and the construction of a new dam at Vir designed to supplement the storage of 24,000 million cubic feet impounded by the Lloyd Dam at Bhatgar. The construction of the Vir Dam, estimated to cost about a crore of rupees which was abandoned on the assumption that by economical distribution of the water available, the storage at Bhatgar would be sufficient to meet all irrigation requirements of the Nira Valley, will however have to be reconsidered owing to the development of irrigation by the opening of sugar factories in the Valley. The remodelling of the Nira Left Bank Canal, which was started in the year 1925–26, has made considerable progress and the work is expected to be completed by the end of the year 1941–42. The expenditure incurred during the year amounted to Rs. 42,164.

The rainfall at Bhatgar was 45·63 inches as compared with 33·72 inches of the previous year. The rainfall along the Nira Left Bank Canal was 22·56 inches. The water in the Shetphal Tank reached its lowest depth of 20·25 feet on the 11th June 1940, the corresponding contents being 140·29 million cubic feet. The tank reached the full supply level of 37·50 feet on the 25th September 1940 the corresponding contents being 572·53 million cubic feet.

The following table gives the figures of area irrigated, revenue assessed, etc., during the year as compared with the averages of the previous three years :—

Area irrigated.		Water rates assessed.		Gross assessed revenue.	
1940–41.	Average.	1940–41.	Average.	1940–41.	Average.
Acres.	Acres.	Rs.	Rs.	Rs.	Rs.
74,491	75,370	7,67,039	7,33,278	7,78,418	7,49,608

Working expenses.		Realisations.		Rainfall.	
1940–41.	Average.	1940–41.	Average.	1940–41.	Average.
Rs.	Rs.	Rs.	Rs.	Inches.	Inches.
1,89,542	2,15,836	7,41,317	6,97,220	22·56	19·51

The area of sugarcane blocks was 16,848 acres on the Nira Left Bank Canal and that on the Shetphal Tank, 1,641 acres compared with 16,560 and 1,644 acres, respectively, during the previous year, while the area under two-season blocks on the Nira Left Bank Canal was 19,901 acres and on the Shetphal Tank 1,755 acres compared with 18,630 and 1,418 acres, respectively. The cost incurred on the measuring establishment employed

was 5 pies per acre —against the same amount of the previous year. Remissions and refunds amounting to Rs. 2,266 and no refunds were sanctioned during the year under report. The cost of maintenance and repairs amounted to Rs. 71,712.

The perennial section of the Nira Left Bank Canal is up to mile 75 and that of the Shetphal Tank is up to mile 10 of the Shetphal Channel.

POONA IRRIGATION AND RESEARCH DIVISION.

MUTHA CANALS.

This system came into operation in 1874-75. The canals were constructed at a cost of about Rs. 65½ lakhs, including the cost of a large ghat-fed storage reservoir (Lake Fife) on the Mutha river at Khadakwasla, about 12 miles from Poona. The dam is 107 feet high, spanning the valley of the Mutha. The system comprises two canals, the Mutha Right Bank and Mutha Left Bank Canals, 70 and 18 miles long, respectively. The maximum designed discharges of the two canals at their heads are 412 and 38·5 cusecs, respectively. Both the canals take off direct from the lake, which has a storage capacity of 3,091* million cubic feet, of which 508 million cubic feet are reserved for the Poona Water Supply system as a margin of safety in the event of replenishment being received late. The storage is partly utilised for drinking and domestic purposes in Poona and partly for irrigation. The supply available for irrigation being insufficient the perennial limit of the Mutha Right Bank Canal is restricted to the reach between the head of the canal and mile No. 23⅝, i.e., up to and including Distributary No. 9. Even so the supply available in the lake is totally inadequate to meet the increasing demands on it and a project for increasing the storage is under consideration. The Matoba tank is a tail tank receiving the surplus supply of the canal during the monsoon months.

On 1st April, the level of water in Lake Fife was 15·25 feet above the sill of the canal sluices, the corresponding contents being 949 million cubic feet, as compared with 19·90 feet and 1,360 million cubic feet in the previous year. The lowest level reached was 6·95 feet above sill level on the 24th of June when replenishment commenced. The lake filled to the level of the sills of the waste weir on 28th June and water was stored to 34 feet (contents being 3,091 million cubic feet) above sluices on 26th September and the draw off commenced from 5th November 1940. The run-off from the catchment of the lake (196 square miles) amounted to 48,707 million cubic feet. The level of water on the 31st March 1941 was 19·85 feet, the corresponding contents being 1,355 million cubic feet as compared with 18·35 feet and 1,217 million cubic feet, respectively in the previous year. The rainfall at Khadakwasla was 40·70 inches as compared with 20·25 inches in the previous year. The Matoba tank water level on the 15th February 1940 was 11·70 feet. Replenishment from the Mutha Right Bank Canal commenced from the 29th June. The

*During the year under report the work of contouring of the lake basin was carried out and the contents now worked out are 3,091 M.C.ft. against the original contents of 3,955 M.C.ft.

full supply level of the tank (29 feet) was reached on the 1st September 1940, the corresponding contents being 184 million cubic feet.

The following table gives the figures of area irrigated, revenue assessed, etc., during the year as compared with the averages of the previous three years :—

Area irrigated.		Water rates assessed.		Gross assessed revenue.	
1940–41.	Average.	1940–41.	Average.	1940–41.	Average.
Acres.	Acres.	Rs.	Rs.	Rs.	Rs.
18,831	15,165	1,55,529	1,56,134	3,73,130	3,50,122

Working expenses.		Realisations.		Rainfall.	
1940–41.	Average.	1940–41.	Average.	1940–41.	Average.
Rs.	Rs.	Rs.	Rs.	Inches.	Inches.
1,05,838	1,01,483	4,07,370	3,53,608	18·35	21·33

The area cultivated under sugarcane was 1,938 acres as compared with 2,225 acres in the previous year. The area under two season blocks on the Mutha Canals was 1,954 acres and that on Matoba Tank 1,723 acres as compared with 1,980 and 1,800 acres, respectively, in the previous year. The quantities of water supplied to the Poona Cantonment and Poona City Municipality during the year was 1,433 and 3,109 million gallons, respectively, as compared with 1,326 and 3,154 million gallons, respectively, in the previous year. The revenue assessed amounted to Rs. 57,346 and Rs. 1,27,201 respectively compared with Rs. 52,427 and Rs. 1,28,162, respectively, during the previous year. The cost incurred on the measuring establishment employed was equivalent to a figure of Re. 0–1–0 per acre against Re. 0–1–1 in the previous year. The expenditure incurred on maintenance and repairs amounted to Rs. 39,192.

Kasurdi Tank.

This tank, which dried up on 3rd November 1939, received its first replenishment on 12th June 1940 to a level of 17·50 feet with corresponding contents of 0·85 million cubic feet and dried on 17th June 1940. The tank received second replenishment on 27th September 1940 and immediately dried on 30th September 1940. The third replenishment was received on 14th October 1940 to a level of 17·60 feet with corresponding contents of 0·85 million cubic feet and dried on 3rd November 1940. The tank received fourth replenishment on 28th November 1940 and finally dried on 5th December 1940. The tank is almost completely silted up to a depth of 16 feet and hence there is very little irrigation under this tank.

The area irrigated and assessed revenue was 10 acres and Rs. 21, respectively. The leasing out of the tank bed for cultivation is the main source of revenue. The gross assessed revenue amounted to Rs. 1,083 and working expenses to Rs. 688 during the year under report. The cost of M. & R. came to Rs. 300. The rainfall was 10·49 inches against 17·63 inches, the average of past 3 years.

NASIK IRRIGATION DIVISION

GODAVARI CANALS.

This is one of the major irrigation works undertaken in the Deccan for the protection of areas liable to famine. It was started in 1907 and completed in 1915–16 at a cost of about 1 crore of rupees. The system comprises—

(1) A storage reservoir (Lake Beale) on the Darna River, a tributary of the Godavari, situated about 20 miles from Nasik ;

(2) A pick-up-weir at Nandur-Madhmeshwar on the Godavari 47 miles below the Darna Dam, which impounds the water released from the storage reservoir ; and

(3) Two canals, the Right Bank Canal, 69 miles long, which serves the northern tracts of the Ahmednagar District and the Left Bank Canal, 48 miles long, which irrigates lands north of the Godavari in the Nasik and Ahmednagar Districts.

The length of the Darna Dam (inclusive of its waste weir) exceeds a mile and the dam has a maximum height of 92 feet above its lowest foundation level. The lake has a storage capacity of 7,763 million cubic feet and the cost of the dam was Rs. 34·27 lakhs. The catchment area is 156 square miles. The weir at Nandur-Madhmeshwar is a work of considerable magnitude, its length being 3,618 feet inclusive of the Right and Left Bank Canal regulators. It has a maximum height of 34 feet above the level of the river bed. Scouring sluices have been constructed close to the head regulators of the two canals with the object of keeping the approach channels to the latter clear of silt. The total area under the command of the canals is 232,390 acres. The two canals (Right Bank and Left Bank) are designed to discharge 384 and 228 cusecs at their heads, respectively, with full supply depths of 7 feet and 6 feet, respectively.

On the 1st April, the level of water in the lake was 44·4 feet, the corresponding contents being 2,696 million cubic feet. The lowest level of 8·0f eet was reached on the 17th June, the contents being 155 million cubic feet, when the lake began to receive replenishment, until it overflowed on the 11th July. The draw-off for irrigation purposes commenced on the 22nd December with a water level of 64·5 feet, the corresponding contents being 7,590 million cubic feet. On the 31st March 1941 the level of water was 52·9 feet, the corresponding contents being 4,282 million cubic feet. The perennial limit of the Right Bank Canal is up to mile 69 and that of the Left Bank Canal up to 44 miles. The average rainfall in the catchment area of the lake was 54·25 inches.

The following table gives the figures of area irrigated, revenue assessed, etc., during the year as compared with the corresponding averages of the past three years :—

Name of work.	Area irrigated.		Water rates assessed.		Gross assessed revenue.	
	1940–41.	Average.	1940–41.	Average.	1940–41.	Average.
	Acres.	Acres.	Rs.	Rs.	Rs.	Rs.
Lake Beale	609	429	1,997	1,421	7,68,816	5,08,603
Godavari Right Bank Canal.	23,214	20,006	4,40,805	2,74,601		
Godavari Left Bank Canal.	14,545	14,085	2,92,623	2,08,073		

Name of work.	Working expenses.		Realisations.		Rainfall.	
	1940–41.	Average.	1940–41.	Average.	1940–41.	Average.
	Rs.	Rs.	Rs.	Rs.	Inches.	Inches.
Lake Beale	2,71,270	2,56,360	6,63,552	4,12,240	..	..
Godavari Right Bank Canal.					17·14	22·10
Godavari Left Bank Canal.					18·47	22·31

The increase in the area irrigated and the assessed revenue was due to increase in cane areas as well as seasonals due to unsatisfactory rainfall. The area of sugarcane blocks was 12,567 acres as compared with 10,449 acres in the previous year. The area of two-seasonal blocks was 1,281 acres against 281 in the previous year. The cost of the measuring establishment employed was 12 pies per acre as against 10 pies of the previous year. The remissions sanctioned during the year amounted to Rs. 205. The cost incurred on maintenance and repairs amounted to Rs. 96,835.

CHANKAPUR TANK—GIRNA CANAL.

This is comparatively small irrigation system situated in the Nasik District having its storage reservoir at Chankapur fed from a catchment of 100 square miles in extent and its pick-up-weir at Thengoda situated further downstream on the Girna river, from which weir the Girna canal (19 miles in length) takes off. The tank is situated on the Girna river, a tributary of the Tapti and has been formed by the construction of

a masonry dam 140 feet high, which impounds 1,500 million cubic feet of water. The dam and the canal (up to mile 13) were completed in 1909-10 and the canal has been in operation since then. The extention of this canal designed to carry about 40 cusecs, up to mile 19 was completed in 1920-21. The designed discharge of the canal at its head is 90 cusecs and at its tail 15 cusecs, the corresponding full supply depth being 4½ feet and 2 feet, respectively. The total area under the command of the canal is 29,182 acres and the irrigable area is 8,500 acres.

On the 1st April, the level of water in the tank was 77·85 feet, the corresponding contents being 861 million cubic feet. The lowest level of 37·40 feet was reached on the 21st June (contents 368 million cubic feet) when the lake began to receive replenishment. The first draw off for irrigation purposes commenced on the 23rd November with the level of water at 92 feet, the corresponding contents being 1,548 million cubic feet. On the 31st March 1941, the level of water was 85 feet, the contents then being 1,156 million cubic feet.

The following table gives the figures of area irrigated, revenue assessed, etc., during the year as compared with the averages of the past three years :—

Area irrigated.		Water rates assessed.		Gross assessed revenue.	
1940-41.	Average.	1940-41.	Average.	1940-41.	Average.
Acres.	Acres.	Rs.	Rs.	Rs.	Rs.
11,893	9,849	1,39,621	93,853	1,41,799	95,976

Working expenses.		Realisations.		Rainfall.	
1940-41.	Average.	1940-41.	Average.	1940-41.	Average.
Rs.	Rs.	Rs.	Rs.	Inches.	Inches.
54,397	63,830	1,72,708	74,987	24·62	26·79

The increase in area irrigated and assessed revenue was due to increase in cane area. The cane area was 3,654 acres as compared with 3,08[illegible] acres in the previous year. The cost of measuring establishment was equivalent to 10 pies per acre as compared with 8 pies obtained during the previous year. There were no remissions sanctioned during the year under report. The expenditure incurred on maintenance and repairs amounted to Rs. 20,102.

Kadwa River Works.

These works, which came into operation in 1868-69, consist of three small canals, viz., the Palkhed, the Ojhar Tambat and the Wadali, taking off from weirs constructed across the Kadwa river and its tributary th

Banganga. The system comprises 38 miles of canals and distributaries. The storage reservoir is at Waghad (a ghat-fed storage) situated on the Kolwan river in the Nasik District. The catchment of the tank is 29 square miles in extent. The tank is remarkable for the size of its earthen dam, which has a maximum height of 96 feet. The designed discharges of the Palkhed canal at its head and at its tail are 63 cusecs and 15 cusecs, respectively, the corresponding depths at full supply being 3½ feet and 2 feet. The designed discharges of the Ojhar Tambat canal at its head and at its tail are 33 cusecs and 5 cusecs, respectively, the depths at full supply being 3 feet and 1 foot, respectively. The designed discharges of the Wadali canal at its head and at its tail are 19 cusecs and 5 cusecs, respectively, the depths at full supply being 2 feet and 1 foot, respectively.

On the 1st April, the level of the water in the tank was 39·10 feet above the sill, the corresponding contents being 317·2 million cubic feet. The lowest level of 24·35 feet, was reached on 22nd June the contents being 42 million cubic feet when the lake began to receive replenishment until it overflowed on the 16th July 1940. The draw-off for irrigation purposes commenced on the 27th December with a water level of 47·60 feet, the corresponding contents being 508·46 million cubic feet. On the 31st March 1941 the level of water was 42·4 feet, the corresponding contents being 355 million cubic feet.

The following table gives the figures of area irrigated, revenue assessed, etc., during the year as compared with the averages of the past three years :—

Name of Canal.	Area irrigated.		Water rates assessed.		Gross revenue assessed.	
	1940–41.	Average.	1940–41.	Average.	1940–41.	Average.
	Acres.	Acres.	Rs.	Rs.	Rs.	Rs.
Palkhed Canal ..	1,643	2,300	16,540	18,803		
Ojhar Tambat Canal ..	853	1,126	10,054	9,873	37,334	38,568
Wadali Canal ..	582	767	8,109	8,085		

Name of Canal.	Working expenses.		Realisations.		Rainfall.	
	1940–41.	Average.	1940–41.	Average.	1940–41.	Average.
	Rs.	Rs.	Rs.	Rs.	Inches.	Inches.
Palkhed Canal ..					23·33	31·74
Ojhar Tambat Canal ..	32,233	32,096	41,793	34,154	25·48	25·81
Wadali Canal ..					18·68	29·51

The decrease in the assessed revenue was due to less demand for onio crop (the chief crop on the system) due to low market prices. Th expenditure on maintenance and repairs amounted to Rs. 11,412.

The cost incurred on the measuring establishment employed was 9 pie per acre as against 9 pies for the previous year. Remissions sanctione during the year amounted to Rs. 158.

AHMEDNAGAR DIVISION.

PRAVARA RIVER WORKS.

This canal system, which was constructed at a cost of Rs. 1½ crore comprises :—

(1) The Wilson Dam at Bhandardara on the Pravara river. Th dam which impounds the water of the Lake Arthur Hill, is one of th highest dams in the world having a height of 282 feet. It is 1,600 fe in length and the lake formed by the dam has a storage capacity of som 12,092 million cubic feet.

(2) A pick-up-weir, 890 feet long, situated at Ojhar, 53 miles dov stream from Lake Arthur Hill, and about 8 miles east of Sangame and

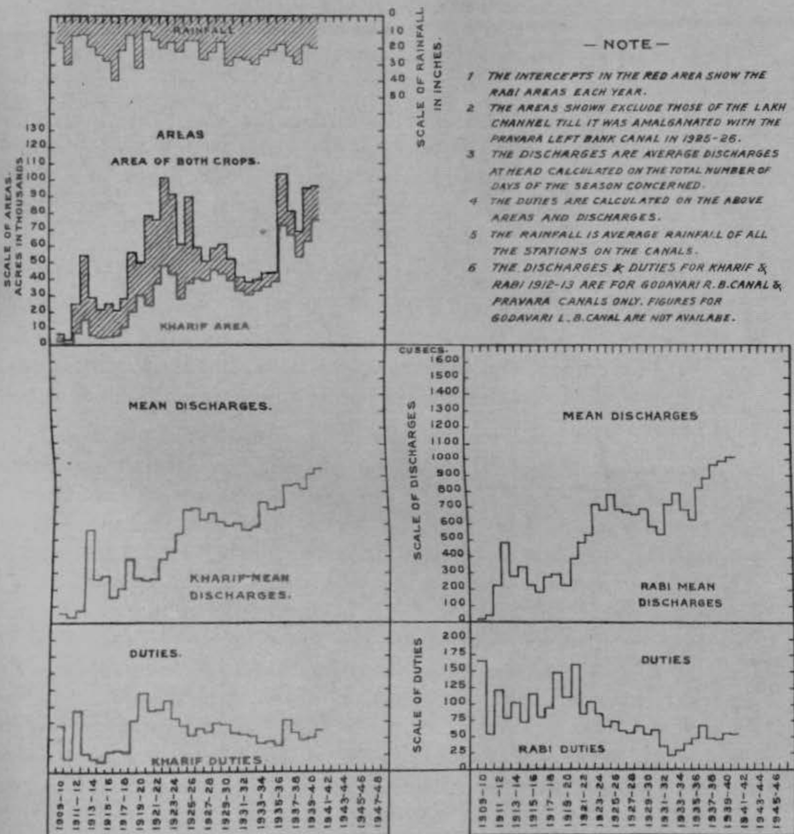
(3) Two canals, the Pravara Right Bank Canal, 33 miles long, an the Pravara Left Bank Canal, 48 miles long, which take off at the we at Ojhar.

These canals irrigate lands in the Ahmednagar District and comman an area of 228,720 acres. The designed discharges of the two can (Pravara Right and Left Bank Canals) at head are 152 and 530 cuse respectively, the corresponding full supply depths being 5 feet and 8 fe The work of remodelling the first 16½ miles of the Pravara Left Ba Canal and the Northern Branch has been completed in order to meet t increased demand for water from the sugar factories established on t Left Bank Canal and the work of remodelling Distributaries Nos. 8 and has also been completed. The remodelling work of Water Course Nos. 33 and 34 of the Pravara Left Bank Canal is in progress. With t remodelling of the canal and the rotational running now practised wee do not appear at present. The Ojhar weir has been raised by two f in order to obtain the necessary supplies in the two Canals. The heig of the waste weir at Bhandardara was raised by 5·45 feet by construct a crest wall. The construction of the Wilson Dam, which impounds t water of Lake Arthur Hill, was commenced in 1911 and completed in 19 The catchment area of the lake is 47 square miles ; it is situated in t ghats and has an assured run-off. The dam is designed to impound maximum depth of water of 270 feet and is constructed across a gorge the valley of the Pravara river. At present water is impounded to depth of 265·45 feet giving a storage of 11,139 million cubic feet and th could be increased to 12,092 million cubic feet with a corresponding dep of 270 feet by the erection of automatic gates on the waste weir or by t construction of syphon spillways and the raising of the waste weir.

AHMEDNAGAR DIVISION

GODAVARI & PRAVARA CANALS COMBINED WORKING RECORD

FOR THE YEAR 1910–41



— NOTE —

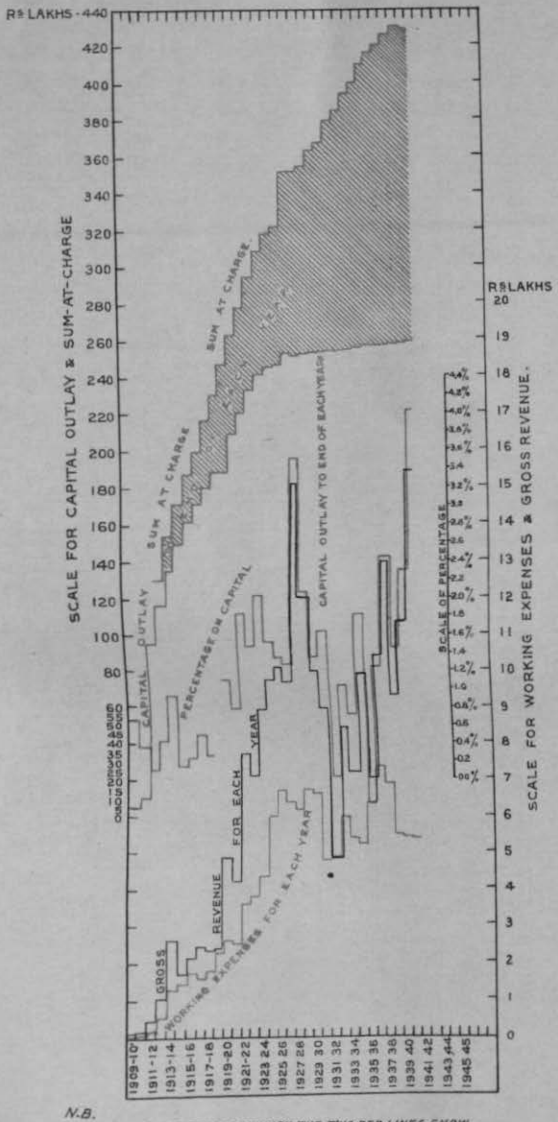
1. THE INTERCEPTS IN THE RED AREA SHOW THE RABI AREAS EACH YEAR.
2. THE AREAS SHOWN EXCLUDE THOSE OF THE LAKH CHANNEL TILL IT WAS AMALGAMATED WITH THE PRAVARA LEFT BANK CANAL IN 1925-26.
3. THE DISCHARGES ARE AVERAGE DISCHARGES AT HEAD CALCULATED ON THE TOTAL NUMBER OF DAYS OF THE SEASON CONCERNED.
4. THE DUTIES ARE CALCULATED ON THE ABOVE AREAS AND DISCHARGES.
5. THE RAINFALL IS AVERAGE RAINFALL OF ALL THE STATIONS ON THE CANALS.
6. THE DISCHARGES & DUTIES FOR KHARIF & RABI 1912-13 ARE FOR GODAVARI R.B.CANAL & PRAVARA CANALS ONLY. FIGURES FOR GODAVARI L.B.CANAL ARE NOT AVAILABE.

(G) G.P.& R. Press, 1941.

[signature] 22-5-41

EXECUTIVE ENGINEER
AHMEDNAGAR DIVISION

AHMEDNAGAR DIVISION
GODAVARI & PRAVARA CANALS
COMBINED FINANCIAL RECORD.
FOR THE YEARS 1910 - 41



N.B.

THE INTERCEPTS BETWEEN THE TWO RED LINES SHOW ARREARS OF INTEREST UNPAID UP TO END OF EACH YEAR WHICH BEING ADDED TO THE CAPITAL, GIVES SUM AT CHARGE

THE INTERCEPTS BETWEEN THE GREEN & BLACK LINES SHOW THE NET INCOME EACH YEAR.

NAME OF CANAL	CONSTRUCTION COMMENCED IN.	CANAL WAS OPENED IN.
GODAVARI CANALS	1907	1911-12
PRAVARA CANALS.	1909	1909-10

22-9-41

EXECUTIVE ENGINEER
AHMEDNAGAR DIVISION.

G.P.Z.-P. Poona 1942.

On the 1st April, the level of water in the lake was 216·50 feet, the corresponding contents being 4,043 million cubic feet. The lowest level of 147·2 feet was reached on the 24th June, the contents being 864 million cubic feet. Replenishment commenced with effect from the 25th June and the full supply level of 265·45 feet was reached on the 1st August, the contents being 11,139 million cubic feet. The maximum flood occurred on the 2nd August, when the level was 268 feet, which lasted for about 12 hours. The full supply level was maintained till the 26th October 1940 and the draw off for irrigation purposes commenced on this date. The level of water gradually fell to 240·80 feet on the 15th February 1941, the contents being 7,113 million cubic feet. The level of water on the 31st March 1941 was 225·20 feet, the corresponding contents being 5,277 million cubic feet. The yield from the catchment (47 square miles) of the lake was 22,688 million cubic feet while the average rainfall of the several raingauge stations was 236·49 inches. The rainfall was quite satisfactory.

The following table gives the figures of area irrigated, revenue assessed, etc., during the year as compared with the averages of the past three years :—

Name of work.	Area irrigated.		Water rates assessed.		Gross assessed revenue.	
	1940–41.	Average.	1940–41.	Average.	1940–41.	Average.
	Acres.	Acres.	Rs.	Rs.	Rs.	Rs.
Pravara Right Bank Canal	12,849	9,907	170,365	1,26,051	1,74,516	7,13,227
Pravara Left Bank Canal ..	45,603	37,421	7,55,293	5,56,883	7,64,574	

Name of work.	Working expenses.		Realisations.		Rainfall.	
	1940–41.	Average.	1940–41.	Average.	1940–41.	Average.
	Rs.	Rs.	Rs.	Rs.	Inches.	Inches.
Pravara Right Bank Canal	2,66,827	3,39,343	9,02,612	6,94,893	16·51	22·87
Pravara Left Bank Canal ..					22·27	25·02

The increase in the area irrigated and the irrigation assessment was due to increase in sugarcane irrigation. The total area of sugarcane

blocks was 7,179 acres while the area under two-seasonal blocks was 183 acres as compared with 6,633 acres and 823 acres, respectively, in the previous year. The remissions sanctioned during the year amounted to Rs. 3,988. The cost of the measuring establishment was equivalent to 12 pies per acre as against 13 pies of the previous year. The expenditure incurred on maintenance and repairs to the Wilson Dam and the two canals amounted to Rs. 98,063.

BHATODI TANK.

This is a small tank situated on the Mehekri river about 12 miles from Ahmednagar. It depends entirely on local rains for its supply. Due to silting, the storage capacity of the tank has been reduced from 154 million cubic feet to about 40 million cubic feet. The first replenishment was received on 10th June, which raised the level of water to 18 feet. The highest level of 24·10 feet was reached on 23rd June, and the waste weir overflowed to a depth of 1·60 feet. The lowest level in the tank was 20·60 feet on the 7th January 1941.

The following table gives the figures of area irrigated, revenue assessed, etc., during the year as compared with the averages of the past three years :—

Area irrigated.		Water rates assessed.		Gross assessed revenue.	
1940–41.	Average.	1940–41.	Average.	1940–41.	Average.
Acres.	Acres.	Rs.	Rs.	Rs.	Rs.
330	649	1,357	2,976	2,716	4,057

Working expenses.		Realisations.		Rainfall.	
1940–41.	Average.	1940–41.	Average.	1940–41.	Average.
Rs.	Rs.	Rs.	Rs.	Inches.	Inches.
2,822	2,777	4,838	5,717	27·6	26·47

Due to uncertainty of water no two-seasonal blocks were sanctioned. No remissions were sanctioned during the year under report. The expenditure incurred on maintenance and repairs during the year amounted to Rs. 1,181.

CENTRAL CIRCLE.

POONA DIVISION.

SHIRSUPHAL TANK.

On the 1st April, the level of water in the tank was 15·04 feet, the corresponding contents being 43·80 million cubic feet. Replenishment was received on the 18th September. The highest level reached was 21·20 feet on the 29th November, the corresponding contents being 101·43 million cubic feet. The tank did not fill to its full supply level. The supply available was fully utilised for irrigation. The full supply level of the tank is 31 feet, the corresponding contents being 356·60 million cubic feet. The rainfall during the year was 15·30 inches, against 19·58 inches, the average of the preceding three years.

BHADALWADI TANK.

On the 1st April, the level of water in the tank was 27·70 feet, the corresponding contents being 87·24 million cubic feet. The lowest level of 24·55 feet was recorded on the 6th June, the corresponding contents being 66·25 million cubic feet. The tank received replenishment on 7th June, and the highest level of 26·80 feet was reached on the 21st October, the corresponding contents being 88·26 million cubic feet. The full supply level of the tank is 35 feet with corresponding contents of 190·74 million cubic feet. The rainfall gauged during the year was 9·04 inches, against 30·13 inches, the average of the preceding three years.

The following table gives the figures of area irrigated, revenue assessed, etc., during the year as compared with the averages of the past three years :—

Name of tank.	Area irrigated.		Gross assessed revenue.		Working expenses.	
	1940-41.	Average.	1940-41.	Average.	1940-41.	Average.
	Acres.	Acres.	Rs.	Rs.	Rs.	Rs.
Shirsuphal	1,128	1,070	6,199	5,499	2,798	2,987
Bhadalwadi	1,038	1,294	5,420	6,659	2,805	3,153

SATARA DIVISION.

The area irrigated, the gross assessed revenue and the working expenses of the 6 works mentioned below as compared with the averages of the preceding three years, are given in the following statement :—

Name of work.	Area irrigated.		Gross assessed revenue.		Working expenses.	
	1940–41.	Average.	1940–41.	Average.	1940–41.	Average.
	Acres.	Acres.	Rs.	Rs.	Rs.	Rs.
1. Krishna Canal ..	7,322	4,994	58,232	46,517	17,213	34,344
2. Rewari Canal ..	510	646	3,003	3,623	2,948	2,216
3. Upper Man River Works.	1,175	1,000	6,215	5,175	7,463	7,313
4. Yerla River Irrigation Works.	4,622	3,621	26,296	19,918	11,976	10,192
5. Chikhli Canal ..	350	310	1,569	2,216	1,604	1,556
6. Maini Tank ..	1,690	1,344	8,170	6,758	4,695	4,095

Krishna Canal.

The total rainfall gauged at Retre Budruk, which is situated in the centre of the canal track, was 27·87 inches, as compared with the average of 25·48 inches for the past three years. Water could not be made available for sugarcane beyond mile 16/4 of the canal, because of insufficient summer flow in the river and of very little storage capacity at the head works.

Rewari Canal.

The rainfall gauged at Rewari, which is situated one mile below the bandhara, was 23·96 inches, as compared with 24·12 inches, the average of the preceding three years. The decrease in area irrigated and revenue was due chiefly to shortage of water during the Rabi season.

Upper Man River Works.

(Pingli Tank.)

On the 1st April, the tank was dry. The first replenishment was received on the 11th June, when the water level rose to R. L. 2358·69 i.e. by 1·6 ft., which was equivalent to a storage of 23·44 million cubic feet. A further replenishment was received on the 24th June when the level rose to R.L. 2364·59 (7·5 feet over silted bed) equivalent to 72·41 million cubic feet. The highest level of 10·2 feet (over silted bed) was reached on the 20th October with the corrsponding contents of 102·70 million cubic feet.

The waste weir did not overflow this year. The rainfall gauged at Gondawla, which is situated 3 miles below the tank, was 19·75 inches compared with 19·65 inches, the average of the preceding three years.

YERLA RIVER IRRIGATION WORKS.

(*Nehr Tank.*)

On the 1st April the level of water in the tank was at R. L. 2650·07= 9·45 feet (above silted bed) equivalent to a storage of 75·11 million cubic feet. The first replenishment was received on the 14th April which raised the water level to 14·6 feet (over silted bed) i.e. to R. L. 2655·22 equal to 155·79 million cubic feet. Another replenishment was received on the 19th April which raised the level to 15 feet or to R. L. 2655·62 i.e., equivalent to 163·32 million cubic feet. Part of this supply was utilised for hot weather irrigation. The highest level was reached during the year on the 29th September and 4th October when the level rose to 23·7 feet the contents being then 359·80 million cubic feet and the R. L. 2,664·32. Water did not flow over the waste weir this year. The rainfall gauged at Nehr was 27·30 inches as compared with 26·38 inches, the average of the preceding three years. Due to shortage of rainfall, there was an increased demand for water which resulted in increased area during the Rabi Season.

CHIKHLI CANAL.

On the 1st April, there was no flow in the river Nandni from which the canal receives its supply, the level of the water in the river being 2 feet. The first flood which occurred on the 11th April raised the level by 0·5 foot. The second flood of 1 foot occurred on the 13th April. The river became almost dry in the month of August. At the end of Kharif on the 19th September the heaviest flood of 6 feet passed over the weir and the waste weir began to overflow. The rainfall gauged at Chikhli was 9·13 inches compared with 16·12 inches, the average of the preceding three years.

MAINI TANK.

On the 1st April, the tank was dry and it remained so until the first replenishment was received on the 14th June raising the level to 4·8 feet or to R. L. 2301·32 the contents being 26·08 million cubic feet. The second replenishment was received on 21st June with the R. L. at 2301·52 =5 feet, the contents being 31·40 million cubic feet. Subsequent replenishments were received on 24th and 28th June and the water level attained its maximum height on 15th October when the tank over-flowed slightly with a depth of 0·3 foot only over the crest of the waste weir. The rainfall gauged at Maini was 22·80 inches as compared with 19·34 inches, the average of the preceding three years.

SHOLAPUR DIVISION.

The area irrigated, the gross assessed revenue and the working expenses of the tanks in the Sholapur Division, as compared with the corresponding averages of the preceding three years, are given in the following statement :—

Name of work.	Area irrigated.		Gross assessed revenue.		Working expenses.	
	1940–41.	Average.	1940–41.	Average.	1940–41.	Average.
	Acres.	Acres.	Rs.	Rs.	Rs.	Rs.
Ekruk Tank	3,542	4,372	1,67,735	1,48,822	21,381	19,781
Koregaon Tank ..	273	480	1,383	2,259	2,003	1,977
Ashti Tank	3,596	3,228	21,710	19,035	16,241	10,175
Pathri Tank	651	695	11,181	11,093	3,715	3,617

EKRUK TANK.

The Ekruk Tank, situated near Sholapur, which came into operation in the year 1872–73, is an artificial reservoir formed by the construction of a large earthen embankment 7,000 feet long and having a maximum height of 76 feet. It supplies water not only for irrigational purposes but also to the town of Sholapur, the mills in Sholapur and the Great Indian Peninsula Railway for non-irrigational purposes. Under unfavourable conditions of replenishment, which occur periodically, the supply available from the tank is not sufficient to meet all the demands which arise, and the question of providing a supplementary storage is under consideration.

On the 1st April, the level of the water in the tank was 25·37 feet above the sill of the outlet. The storage available on the 31st May was 560·42 million cubic feet only, which was insufficient for accepting Kharif demand and hence no monsoon irrigation was allowed in the beginning. During June and July, very little replenishment was received. This made the situation serious but fortunately there was a heavy rainfall on the 11th August which improved the situation and raised the level in the tank from 22 feet to 34 feet. It was then possible to supply water to Kharif crops but due to sufficient rainfall, the demand was not more than for 40 acres.

Cultivation of 340 acres of hot weather in addition to 30 acres of cane was allowed. The actual contents in the tank at the beginning of the Rabi season were 2,319·51 million cubic feet which was sufficient to admit

of 920 acres of Rabi non-leased area in addition to the leased area of 2,000 acres. The highest level of water reached was at R.L. 1520·10 i.e. 37·5 feet on 18th October. The mean rainfall gauged at the five stations in the catchment area of the tank was 27·37 inches as compared with 22·17 inches, the average of the preceding three years, and the total replenishment received amounted to 2160·86 million cubic feet. The waste weir did not overflow during the year.

KOREGAON TANK.

On the 1st April, the tank was practically dry and no substantial replenishment was received till August. Kharif irrigation was therefore not allowed. The tank received a total replenishment of 42·66 million cubic feet up to the end of January 1941 and the supply was utilised towards Rabi irrigation. The waste weir did not overflow. The rainfall recorded was 30·95 inches as compared with 24·94 inches, the average of the preceding three years. The highest level of water reached during the monsoon was at R. L. 89·76 on 23rd October 1940.

ASHTI TANK.

On the 1st April, the level of the water in the tank was at R. L. 216·35 i.e., 6·35 feet including 4 feet silt. Water of about 2 feet in depth only was available, and utilised for hot weather crops. The tank received replenishments in the months of June to October and December 1940 and again in January 1941 but the waste weir did not overflow during the year. The mean rainfall gauged at the two stations situated in the catchment was 19·65 inches as compared with the average of 18·83 inches for the preceding three years. The total replenishment received during the year was 229·67 million cubic feet which was fully utilised for irrigation during the Kharif and rabi seasons. The highest level during the monsoon was at R. L. 220·39 on 16th October.

PATHRI TANK.

The tank supplies water to the town of Barsi and the mill industries, as well as for irrigational purposes. On the 1st April, the level of the water in the tank was at R. L. 227·95 i.e. 18·65 feet above the sill of the outlet. Though there were rains in the month of June, the tank did not receive good replenishment. Hence water could not be allowed for Kharif irrigation. Substantial replenishment was however, received in the months of August and September 1940, which was supplemented by further rainfall in October 1940 and January 1941. The waste weir did not overflow. The mean rainfall gauged at the two stations, situated in the catchment area was 23·58 inches as compared with 27·66 inches, the average of the preceding three years. The total replenishment received during the year was 345·66 million cubic feet which was fully utilised for rabi irrigation after reserving sufficient water for the Barsi Municipality. The highest level reached during the monsoon was at R. L. 241·40 on the 19th October.

Mhaswad Tank.

This irrigation tank is formed by an earthern dam built across the Man river, the dam being 9,000 feet long and 80 feet high at its highest point. The tank which is situated on the eastern border of the Satara District, has a storage capacity of 2,602 million cubic feet and supplies water for the irrigation of lands situated mostly in the Sholapur District. Owing to the precarious nature of the rainfall received in the catchment area the supply is not reliable. The tank is provided with a masonry overflow waste weir. The project was commenced in 1876–77 and completed in 1888–89. There is only one canal taking off from the left flank of the dam, previously called Mhaswad Canal No. 1 and now termed Mhaswad Canal, Part I. The designed discharge of the canal is 180·7 cusecs, whereas the present actual discharge is about 146 cusecs with a full supply depth of 4 feet. The Nira Right Bank Canal cuts across the Mhaswad Canal at mile 15 and the old Mhaswad Canal has been remodelled to function as Branch III of the Nira Right Bank Canal passing a discharge of 300 cusecs. No water from the Nira Right Bank Canal is now available for Branch III of the Nira Right Bank Canal system and the irrigation on this branch is being carried out with water obtained from the Mhaswad Tank but the supply is always insufficient to meet the full demand. Hence water from the Nira Right Bank Canal has to be borrowed so as to meet the demand of the irrigators.

On the 1st April, the level of water in the tank was 14·80 feet above the sill of the outlet. The tank received replenishments in June and September to November 1940 and again in January 1941 with the result that the waste weir overflowed on 14th October 1940 and again on 8th January 1941. The available supply was utilised in meeting the hot weather and kharif and rabi demands. Water from the Nira Right Bank Canal had also been obtained to supplement the Mhaswad Tank supply in the Kharif season so as to meet the demands of the irrigators. The highest level reached during the monsoon was at R. L. 1939·70, on 13th October 1940.

The rainfall in the Canal tract was 23·25 inches compared with 18·77 inches, the average of the preceding three years.

The following table shows the area irrigated, revenue assessed etc. during the year as compared with the corresponding averages of the past three years :—

Area irrigated.		Gross assessed revenue.		Working expenses.	
1940–41.	Average.	1940–41.	Average.	1940–41.	Average.
Acres.	Acres.	Rs.	Rs.	Rs.	Rs.
2,539	2,268	16,338	13,626	22,776	17,593

The area irrigated and gross revenue assessed during the year on Branch No. III of the Nira Right Bank Canal referred to above, were 9,077 acres and Rs. 43,921, respectively.

KHANDESH DIVISION.

JAMDA CANALS.

These canals receive their supply from the Girna river and the supply is supplemented from time to time by water obtained from the Chankapur Tank in the Nasik Irrigation Division. During the year under report no water could be obtained from the Chankapur Tank. The rainfall during the year was 26·01 inches, as compared with 27·63 inches, the average of the preceding three years. The subjoined table shows the area irrigated, the gross assessed revenue and the working expenses as compared with the corresponding average of the preceding three years :—

Area irrigated.		Gross assessed revenue.		Working expenses.	
1940-41.	Average.	1940-41.	Average.	1940-41.	Average.
Acres.	Acres.	Rs.	Rs.	Rs.	Rs.
1,395	1,397	8,471	10,830	14,962	17,830

HARTALA TANK.

The tank derives its supply solely from local rains and this supply is precarious. On the 1st April, the storage of the tank amounted to nil. The first replenishment which was received on the 27th June, raised the contents to 4·76 million cubic feet. The maximum storage of 46·45 million cubic feet was reached on the 4th September. The year closed with a storage of 18·16 million cubic feet on 31st March 1941. The rainfall gauged at the tank was 27·51 inches as compared with 37·41 inches, the average of the preceding three years.

The subjoined table shows the area irrigated, the gross assessed revenue and the working expenses as compared with the corresponding averages of the preceding three years :—

Area irrigated.		Gross assessed revenue.		Working expenses.	
1940-41.	Average.	1940-41.	Average.	1940-41.	Average.
Acres.	Acres.	Rs.	Rs.	Rs.	Rs.
46	22	159	97	1,159	835

MHASWA TANK.

The tank derives its supply from local rains. On the 1st April, the storage of the tank amounted to 15·78 million cubic feet, which gradually diminished to 0·20 million cubic feet. The first replenishment was received on the 22nd June, when the contents increased to 27·31 million cubic feet. The maximum storage of 174·39 million cubic feet was reached on the 15th October ; on the 31st March, the storage was 89·56 million cubic feet. The rainfall gauged at the tank was 30·41 inches as compared with 25·53 inches, the average of the preceding three years.

The area irrigated, the gross assessed revenue and the working expenses, as compared with the corresponding averages of the preceding three years are given below :—

Area irrigated.		Gross assessed revenue.		Working expenses.	
1940–41.	Average.	1940–41.	Average.	1940–41.	Average.
Acres.	Acres.	Rs.	Rs.	Rs.	Rs.
371	405	1,725	3,563	1,410	1,197

SHAHADA CHANNEL.

The channel is fed by the Gomai river, which has a perennial flow. The rainfall gauged at Shahada was 27·46 inches as compared with 23·80 inches, the average of the preceding three years. There was sufficient supply of water throughout the year and the demand for water was normal in both Kharif and Rabi seasons.

The area irrigated, the gross assessed revenue and the working expenses as compared with the corresponding averages of the preceding three years are given below :—

Area irrigated.				Gross assessed revenue.		Working expenses.	
Patasthal.		Jirayat.					
1940–41.	Average.	1940–41.	Average.	1940–41.	Average.	1940–41.	Average.
Acres.	Acres.	Acres.	Acres.	Rs.	Rs.	Rs.	Rs.
1,014	981	943	953	12,049	11,396	8,114	6,631

Lower Panjhra River Works.

These works comprise 8 bandharas and 9 channels situated between Dhulia and Betawad on the Panjhra river, and the Mukti Tank, which is situated about 4 miles to the South-West of Dhulia. The channels obtain their supply from the river but when the supply is insufficient, it is supplemented by water obtained from the Mukti Tank.

On the 1st April, the contents of the tank were 229·98 million cubic feet, which gradually diminished to 188·89 million cubic feet. The first replenishment was received on the 25th June which raised the contents to 199·08 million cubic feet. The maximum storage of 231·89 million cubic feet was reached on the 20th October. The year closed with a storage of 178·22 million cubic feet. The rainfall gauged within the catchment at Dayana and Sadgaon during the year was 19·81 inches as compared with 20·51 inches, the average of the preceding three years.

The subjoined table shows the area irrigated, the gross assessed revenue and the working expenses as compared with the corresponding averages of the preceding three years :—

Area irrigated.				Gross assessed revenue.		Working expenses.	
Patasthal.		Jirayat.					
1940-41.	Average.	1940-41.	Average.	1940-41.	Average.	1940-41.	Average.
Acres.	Acres.	Acres.	Acres.	Rs.	Rs.	Rs.	Rs.
1,277	1,277	1,135	1,125	26,299	26,042	3,636	4,305

NASIK DIVISION.

Parsul Tank.

This tank is formed by an earthen dam across the Parsul river in the Malegaon Taluka of the Nasik District. It depends solely on local rains for its supply. The storage capacity of the tank is 119 million cubic feet with a depth of 35 feet. There is no canal and the irrigation is done by small channels taking off the Parsul river itself downstream of the tank.

On the 1st April the level of water in the tank was at R. L. 1,841·38 i.e. at the outlet sill. The first replenishment was received on 12th June, when the level of water reached R. L. 1,847·78 i.e. 9.54 million cubic feet and continued to rise till 14th August 1940 to 1,876·38 F.S.L., the

corresponding contents being 118·70 million cubic feet. The level of water on the 31st March 1941 was 1,858.08 the corresponding contents being 30·74 million cubic feet. The average rainfall in the catchment areas of the tank was 17·94 inches compared with 16·79 inches, the average of the preceding three years.

The following table gives the figures of area irrigated, revenue assessed, etc. during the year as compared with the averages of the past three years :—

Area irrigated.		Gross assessed revenue.		Working expenses.	
1940–41.	Average.	1940–41.	Average.	1940–41.	Average.
Acres.	Acres.	Rs.	Rs.	Rs.	Rs.
929	871	4,950	4,134	2,271	1,823

The cost of the measuring establishment employed was equivalent to 8 annas 1 pie per acre. An expenditure of Rs. 700 was incurred on maintenance and repairs during the year.

SOUTHERN CIRCLE.

BELGAUM DIVISION.

GADIKERI TANK.

The lands under the command of the tank are all assessed at consolidated rates. The area irrigated and the irrigation share of the land revenue assessed were 423 acres and Rs. 2,344, respectively.

GOKAK CANAL.

This canal system is the most important irrigation scheme in the Southern Circle and consists of a reservoir formed by a masonry weir across the Ghatprabha river at Dhupdal in the Belgaum District, together with 16 miles of main and branch canals and 36 miles of distributaries. The canal commands an area of 18,668 acres, the area irrigable being 17,627 acres. Although the Dhupdal Storage is mainly intended for irrigating lands under the Canal, a stipulated quantity of water is issued to the Gokak Mills Company in accordance with an agreement between Government and the Company, in consideration of which a sum of Rs. 14,313 is annually paid by the Company subject to a rebate in the event of the supply falling short of the quantity contracted for. During the year under report a rebate of Rs. 874 was paid to the Company.

Water was supplied to the M. & S. M. Railway Company at their Hukeri Road Station at a charge of Rs. 50 per month. The total amount recovered from the Railway Company on this account was Rs. 600.

On the 1st April, the gauge reading of the water level in the Dhupdal Reservoir was 19·12 feet. The level gradually decreased to 17·42 feet on the 25th April. Owing to replenishment received the water in the reservoir rose to 18·00 feet on the same day. The level again gradually decreased to 17·52 feet on the 2nd May. Then it began to rise, causing continuous overflow over the weir from the 26th June to the 31st August. During the whole monsoon, the highest flood depth over the crest was 2·68 feet on the 20th July. The maximum discharge for the day was 47,329·12 cusecs. In order to store water from the post monsoon floods, the raising of the 4 feet temporary crest excepting the top two feet of the 100 reserve bays was commenced on the 17th September and completed on the 12th October. The closure of 100 reserve bays was carried out from the 29th October to the 2nd November. A sudden rise in the level of water on the 13th and 14th October caused overflow over the 100 reserve bays by 0·90 feet but no damage was caused thereby to the temporary crest. The level rose to 26·06 feet (the full supply level) on the 5th November. This level continued until the 25th December and then began to decrease. The level on the 31st March 1941 was 21·16 feet.

The following table gives information regarding the area irrigated and revenue assessed as compared with the average of the previous three years :—

—	Area irrigated.	Gross assessed revenue.
	Acres.	Rs.
Average	9,894	70,680
1940-41	9,716	73,062

BIJAPUR DIVISION.

MUCHKUNDI TANK.

This tank is solely dependent on local rains for its supplies and the storage of water in the tank is uncertain owing to the scanty rainfall in the area and the smallness of the catchment. The rainfall recorded during the year was equal to the average of the previous three years.

Owing to its favourable distribution during the year there was a decrease in the demand for tank water. The tank did not get dry during the year. The supply of water in the tank was sufficient for irrigating the lands dependent on it. The highest level of water during the year was R.L. 1,797·2 or 11·26 feet above the sill of the outlet on the 1st April 1940 against the R.L. 1,800·74 or 17·3 feet above the sill of the outlet on the 23rd October 1939. The lowest was R.L. 1,791·30 or 5·36 feet above the sill of the outlet on the 31st March 1941. The gross assessed revenue was Rs. 1,002.

DHARWAR DIVISION.

DAMBAL TANK.

On the 1st April, the water level in the tank was at R.L. 142·48 i.e. 6·28 feet above the silted bed of tank. On the 6th May the tank received its first replenishment when the level of water reached was R.L. 142·50 i.e. 6·30 feet above the silted bed. The highest level reached during the year was R.L. 145·30 or 9·10 feet above the silted bed and just upto the crest of the waste weir. There was sufficient water in the tank during all the seasons of the year. The water level on the 31st March 1941 was at R.L. 141·95 i.e. 5·75 feet above the silted bed.

Part of the land dependent on this tank is assessed at water rates, the balance being assessed at consolidated rates. The total area irrigated and the assessment levied under water rates were 169 acres and Rs. 682 as compared with 178 acres and Rs. 872 the corresponding averages of the previous three years. The irrigated area under consolidated assessment and the Irrigation share of the land revenue assessed were 144 acres and Rs. 916 respectively. The total assessed revenue was Rs. 1,837.

MEDLERI TANK.

On the 1st April the water level in the tank was at R.L. 174·56 i.e. 9·56 feet above the sill of the outlet. The tank received its first replenishment on the 28th April and the water level rose to R.L. 177·70 i.e. 12·70 feet. The highest level reached during the year was at R.L. 179·60 i.e. 14·60 feet above the sill of the outlet on the 27th October. The water supply was adequate and the level of water reached on the 31st March 1941 was at R.L. 173·00 i.e. 8 feet above the sill of the outlet.

The area irrigated and the assessment levied thereon were 92 acres and Rs. 674 as compared with 39 acres and Rs. 408 respectively, the averages of the past three years. The gross assessed revenue was Rs. 866.

Madag Tank.

On the 1st April, the water level was at R.L. 1876·94 or 3·68 feet above the sill of the outlet. The tank received its first replenishment on the 27th June and overflowed from the 1st July 1940 to 4th January 1941. The highest level reached during the year was R.L. 1884·46 or 6·75 feet above the crest of the waste weir. The water level on the 31st March 1941 was R.L. 1870·79, i.e. 3·53 feet above the sill of outlet. The water supply was more than sufficient for the irrigated area for all the seasons.

The area irrigated and the assessment levied thereon were 483 acres and Rs. 2,174 respectively as compared with 428 acres and Rs. 1,893 respectively, the corresponding averages of the previous three years. The increase in both area irrigated and assessment was mainly due to more irrigation of garlic on account of the extension of the Rabi period by about a fortnight which was convenient for agricultural operation of the garlic crop. The gross assessed revenue amounted to Rs. 2,457 as compared with Rs. 2,871, the average of the previous three years.

Asundi Tank.

On the 1st April, the water level in the tank was at R.L. 103·09, i.e. 4·09 feet above the sill of outlet. It received its first replenishment on the 5th May and the level of water reached was at R.L. 106·00 or 7·00 feet above the sill of outlet. The highest level reached during the year was R.L. 107·60, i.e. 8·60 feet above the sill of outlet on the 14th June. There was sufficient water in the tank and no scarcity was felt during the year. The level of water on the 31st March 1941 was at R.L. 103·31, i.e. 4·31 feet above the sill of outlet.

The lands under this tank are partly assessed at water rates and partly at consolidated rates. The area irrigated and the assessment levied thereon under the former head (water rates) 164 acres and Rs. 935 as compared with 102 acres and Rs. 582 respectively, the corresponding averages of the past three years. The area under the consolidated assessment was 190 acres and the irrigation share of land revenue assessed thereon was Rs. 737. The gross assessed revenue amounted to Rs. 2,506 as compared with Rs. 1,617, the average of the past three years.

Dharma Canal.

The canal is fed by the Dharma river and a number of tanks are in turn fed by the canal. The canal began to flow early in May. During the year the rainfall was on the whole fairly good with the result that the supply throughout the season was to the satisfaction of the irrigators. The crop in the whole of the canal zone was in good condition.

The canal is an old one and is dependent on the rains for its supply. There is no storage reservoir. To overcome these difficulties, a project for constructing a storage reservoir at Yemagalli is under the consideration of Government.

The lands commanded by this canal are assessed partly at water rates and partly at consolidated rates. The area irrigated and the assessment levied thereon were 420 acres and Rs. 2,172 respectively as compared with 455 acres and Rs. 2,699, respectively, the corresponding averages of the previous three years. The gross assessed revenue (after deducting Rs. 23,156 to be credited to old work) amounted to Rs. 1,044.

KANARA DIVISION.

MAVINKOP TANK.

The management of this tank has been entrusted to the Revenue Department. The rainfall was 52·41 inches. The supply of water in the tank was adequate for irrigation. The area irrigated which is assessed at consolidated rates amounted to 669 acres and the irrigation share of land revenue was Rs. 2,029 as compared with 547 acres and Rs. 2,018 for the previous year. The gross assessed revenue was Rs. 2,029.

SECTION II.

COMPRISING IRRIGATION WORKS FOR WHICH NEITHER CAPITAL NOR REVENUE ACCOUNTS ARE KEPT.

DETAILED REPORTS BY LOCAL OFFICERS.

NORTHERN CIRCLE.

AHMEDABAD, KAIRA AND PANCH MAHALS AND SURAT AND BROACH DIVISIONS.

KHARI SLUICES.

The flow in the Khari river was quite unsatisfactory owing to the inadequate rainfall. The area of transplantation of rice was only 30 acres. As the flow in the Khari failed the crops were dried up and remissions of himayat had to be granted by the Revenue Department. There was no non-himayat paying area irrigated under this system.

The Khari sluices including the Bherai and the Naika reservoirs were maintained in good order at a cost of Rs. 3,597. The miscellaneous revenue under the Khari Sluices System amounted to Rs. 959 compared with Rs. 727 received in the previous year.

The following table compares the areas irrigated and the assessment levied during the year with the respective averages of the previous three years :—

—	Average.		1940-41.	
	Area.	Revenue after deducting remissions.	Area.	Revenue after deducting remissions.
	Acres.	Rs.	Acres.	Rs.
I. Irrigation above Kalambandhi villages (of Mahij, Bidaj and Lali)	702	1,002	21	62
II. Irrigation from tanks that can be fed by the river Khari—				
Goblaj	358	1,641	39	109
Galki	275	810	21	62
III. Irrigation from Khari sluices proper (i.e., 11 Kalambandhi villages) ..	5,486	18,070	5,531	19,530
Total ..	6,821	21,523	5,612	19,763

The assessment in respect of irrigation dependent on the Khari sluices in the Kalambandhi villages is consolidated. The average rates per acre for land and water respectively were as under :—

—	Irrigation share.	Land share.	Toal consolidated.
	Rs. a. p.	Rs. a. p.	Rs. a. p.
Government land	0 4 11	1 15 0	2 3 11
Alienated land	0 5 4	0 9 4	0 14 8

Muvalia Tank.

This is an important tank situated in the vicinity of Dohad town in the Broach and Panch Mahals Collectorate and has a catchment area of about 30 square miles. During the year under review, it received a good replenishment. Due to favourable and timely rainfall there was less demand for water during the Kharif season and only normal in Rabi season. The area irrigated was 873 acres and the net assessment amounted to Rs. 2,660. The miscellaneous revenue amounted to Rs. 517 compared with Rs. 438 received in the previous year. On this tank the followin works were carried out at the cost mentioned against each :—

	Rs.
(1) Lowering the Left Bank Canal of Muvalia Tank ..	49
(2) Strengthening the bund (as scarcity work) of Muwalia Tank	8,608

Old Tanks.

Improvements to 7 tanks in the Ahmedabad Division and 3 tanks in the Kaira and Panch Mahals Division and repairs to 9 tanks in the Ahmedabad Division, 23 tanks in the Kaira and Panch Mahals Division and 20 tanks in the Surat and Broach Division were carried out at a total cost of Rs. 34,587 and Rs. 23,115 respectively. The areas irrigated and the revenue derived from the old irrigation tanks and bunds were as under :—

Name of Collectorate.	Area irrigated.	Revenue.		Total consolidated assessment.
		Irrigation share.	Land share.	
	Acres.	Rs.	Rs.	Rs.
Ahmedabad	12,329	10,979	43,972	54,951
Kaira	497	687	87	774
Panch Mahals	270	689	1,436	2,125
Broach	745	1,481	5,015	6,496
Surat	3,630	5,926	29,221	35,147

Drainage Channels.

The drainage channels in the Ahmedabad, Kaira and Panch Mahals and Surat and Broach Divisions, were maintained in good order at a cost of Rs. 7,978, Rs. 3,998 and Rs. 4,881 respectively.

DECCAN IRRIGATION CIRCLE.

NIRA CANALS DIVISION.

Rakh Tank.

This tank is situated about 5 miles from Walha railway station of the Madras and Southern Mahratta Railway and is formed by an earthern dam constructed across a nala near Rakh village in Purandhar Taluka of the Poona District. The catchment area of the tank is 5·38 square miles and its capacity is only 34·2 million cubic feet. The tank has two channels of a total length of 3⅝ miles. The area under command on channel No. 1, which is on the left bank, is 265 acres and that on channel No. 2 is 321 acres. The main channel is designed to discharge 12·8 cusecs leaving sufficient margin for all losses in transit. An area of 198 acres was irrigated and the revenue assessed amounted to Rs. 1,350 as compared with 268 acres and Rs. 1,156 respectively during the previous year.

POONA IRRIGATION AND RESEARCH DIVISION.

Effluent Irrigation on the Mutha Right Bank Canal.

The total area of sugarcane irrigated on effluent during the year was 671 acres as compared with 875 acres during the previous year. The average discharge pumped during the year was 10·18 cusecs and the whole discharge was utilised for purposes of irrigation. The total area irrigated was 1,550 acres as compared with 1,480 acres during the previous year. The assessed revenue amounted to Rs. 58,895 as compared with Rs. 72,428 during the previous year. The rate for the supply of effluent for sugarcane was Rs. 72 per acre during the year under report. The decrease in the assessed revenue was partly due to decrease in rate and also due to restricted plantation of new cane due to shortage of water.

Bandharas (Poona District).

Bandharas are small weirs built across streams in order that the level of the water flowing in the streams may be raised sufficiently to command the lands to be irrigated. The following table gives the area irrigated and the consolidated assessed revenue on the bandharas in the Haveli

Taluka of the Poona Collectorate during the year as compared with the average of the past three years :—

—	Area irrigated.	Consolidated revenue.		
		Irrigation share.	Land share.	Total.
	Acres.	Rs.	Rs.	Rs.
1940-41	29	73	174	247
Average	29	73	174	247

Bandharas (Nasik District).

There are numerous bandharas situated in this District. There are in all 299 such bandharas on the list. The expenditure incurred on repairs to bandharas (80 in number) during the year amounted to Rs. 36,762. The following table gives the area irrigated and the consolidated assessed revenue during the year as compared with the averages of the past three years :—

—	Area. irrigated.	Consolidated revenue.		
		Irrigation share.	Land share.	Total.
	Acres.	Rs.	Rs.	Rs.
1940-41	27,213	2,04,350	56,392	2,60,742
Average	27,211	1,90,501	53,863	2,44,364

AHMEDNAGAR DIVISION.

Visapur Tank.

The Visapur Tank dam which is situated about 2 miles from the Visapur railway station on Dhond-Manmad Railway line is built across the Hanga river, a tributary of the Bhima river. It was started as a famine relief work in 1896 and was subsequently completed in successive stages by criminal tribes and convict labour by June 1927. This earthern dam which is 7,440 feet long and 84 feet high, forms a lake having a net capacity of 1,136 million cubic feet. The estimated cost of the whole scheme was Rs. 41 lakhs of which a sum of Rs. 21 lakhs was spent on the dam

and head works and the balance on the construction of the canal, distributaries and minors, which aggregate 46 miles in length. The total area under command is 95,000 acres of which 26,000 acres are irrigable. The catchment area of the tank is 159 square miles in extent and it has a capacity of 1,172 million cubic feet. Irrigation from this tank was first started during the rabi season of 1929–30. Owing to an increased demand for water due to the starting of a small sugar factory on the Chimbla Distributary, the waste weir was raised by 2 feet in March 1934 to increase the storage in the tank by 130·20 million cubic feet. The yield from the catchment (159 square miles) was 314·39 million cubic feet during the year, the average rainfall being 12·52 inches.

On the 1st April, the level of water in the tank was 20·05 feet above the sill of the outlet, the contents being 268 million cubic feet. The lowest level of 14·85 feet was reached on the 9th June 1940, the corresponding contents then being 139 million cubic feet. Replenishment was received in the tank on the 10th June, the corresponding contents being 151 million cubic feet the depth of water being 15·40 feet. The highest level of 29·15 feet was reached on the 25th October 1940 with a storage equivalent to 591 million cubic feet. The tank did not overflow during the year under report. The area irrigated, the irrigation assessment and the gross assessed revenue were 2,922 acres, Rs. 21,053 and Rs. 26,074 as compared with 2,589 acres, Rs. 20,324 and Rs. 23,805 respectively, the averages of the past three years. The expenditure incurred on maintenance and repairs to the tank and canal amounted to Rs. 8,649.

Mandavgan Tank.

This tank is situated on a nala about 2½ miles away from Mandavgan village, taluka Shirgonda in the Ahmednagar District. The earthern dam is 1,605 feet in length. The tank has a hilly catchment of about 5·32 square miles. It is entirely dependent on local rains for its supply of water. This tank has been taken over from the District Local Board, Ahmednagar, from the rabi season of 1932–33, for irrigation management. Replenishment was received on the 24th June the corresponding contents being 13·25 million cubic feet. The area irrigated, and the water rates assessed during the year were 41 acres and Rs. 160 respectively, as compared with 92 acres and Rs. 401 respectively, during the previous year. The expenditure incurred on maintenance and repairs amounted to Rs. 1,092.

POONA IRRIGATION AND RESEARCH DIVISION.

Khamgaon Tank.

This tank which is situated in mile 23 of the Mutha Right Bank Canal is only partially completed. It receives replenishment during the monsoon from the Mutha Right Bank Canal Distributary No. 17. The supply available was issued for the irrigation of 322acres and the irrigation revenue assessed on account of water rates was Rs. 1,637, the corresponding figures for the previous year being 355 acres and Rs. 1,876 respectively.

CENTRAL CIRCLE.

The area irrigated and the gross assessed revenue on small tanks were 801 acres and Rs. 4,831 respectively. The area irrigated and the irrigation share of revenue on the old bandharas and channels in the Khandesh Division were 8,658 acres and Rs. 64,665 respectively.

SHOLAPUR DIVISION.

WADSHIVNE TANK.

On the 1st April, the level of the water in the tank was at R.L. 438·32 feet i.e., 2·32 feet above the sill of the outlet. Due to rainfall in June, there was replenishment of 35·14 million cubic feet and hence Kharif irrigation to the extent of 140 acres was allowed. Owing to poor rains in August and November, the tank did not receive replenishment so as to admit of Rabi irrigation.

During the year under report, the area irrigated and the gross assessed revenue were 144 acres and Rs. 562 as compared with 767 acres and Rs. 3,716 the corresponding averages of the previous three years.

The rainfall gauged at the tank was 17·77 inches, as compared with 22·97 inches the average of the preceding three years.

KHANDESH DIVISION.

TALWADA TANK.

The supply in this tank is generally uncertain. On the 1st April, the contents in the tank were 8·47 million cubic feet which gradually diminished to 0·43 million cubic feet. The first replenishment was received on the 20th June, when the contents were 2·00 million cubic feet. The maximum storage of 29·96 million cubic feet was reached on the 22nd October. The storage went down to 10·45 million cubic feet on 31st March 1941.

The rainfall gauged at the tank was 16·84 inches as compared with 18·84 inches, the average of the preceding three years. The area irrigated was 240 acres and the gross assessed revenue amounted to Rs. 1,138. The revenue realised from water rates during the year was Rs. 1,021 the miscellaneous realisation being Rs. 117. The expenditure incurred on the maintenance and repairs to the tank and canal was Rs. 449.

OLD WORKS.

The old bandharas and channels are grouped as under :—

1. The Upper Panjhra river group including Gondur Tank.
2. The Kan river group.
3. The Burai river group.
4. The Girna river group.
5. The Bori river group.

The subjoined table shows the area irrigated and the revenue derived from these works as compared with the averages of the preceding three years :—

Area irrigated.		Revenue.					
		Irrigation share.		Land share.		Total.	
1940–41.	Average.	1940–41.	Average.	1940–41.	Average.	1940–41.	Average.
Acres.	Acres.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
8,658	8,601	64,665	64,275	13,652	13,160	78,317	77,435

The expenditure on these Bandharas was as under :—

	18—A-Irrigation Works Civil.
	Rs.
Maintenance and Repairs	7,438
Extensions and Improvements	3,811
Survey work	1,011
Total ..	12,260

An expenditure of Rs. 250 was also incurred on river and rain gauge operations during the year.

NASIK DIVISION.

KHIRDI SATHE TANK.

This is a small tank in Yeola Taluka of the Nasik District. The tank is formed by an earthern dam and is dependent on local rains for its supply which is generally sufficient for crops grown during the monsoon and rabi seasons.

On the 1st April, the level of water in the tank was at R.L. 216·60, the contents being 1·90 million cubic feet. Replenishment commenced on the 22nd May when the water level rose to R.L. 219·90 the contents being 7·75 million cubic feet. On the 1st of November the level was at R.L. 228·70, the contents being 40·95 million cubic feet. The draw off for irrigation purposes commenced on the 7th November when the level of water remained the same. On the 31st March, the level of water was at R.L. 218·50 i.e., 4·76 million cubic feet. The area irrigated during the year was 417 acres as compared with 217 acres, the average of the previous three years. The increase was due to more cultivation of sugar cane than in the previous year. The assessed revenue on account of water rates amounted to Rs. 2,911 as compared with Rs. 1,264 the average of the previous three years, the miscellaneous receipts being Rs. 220.

SOUTHERN CIRCLE.

BELGAUM DIVISION.

There are approximately 525 second class irrigation tanks situated in the Belgaum Division. During the year under report repairs to 73 tanks were carried out at a cost of Rs. 23,733 and in addition to this sum, an expenditure of Rs. 3,900 was incurred on the survey of the old tanks. The area irrigated during the year was 12,537 acres, the irrigation share of land revenue being Rs. 1,21,819. The total direct and indirect receipts amounted to Rs. 1,21,924 as compared with Rs. 1,18,625 during the previous year. The remissions sanctioned during the year amounted to Rs. 831.

BIJAPUR DIVISION.

There are 14 tanks in this Division, out of which 4 have been declared as second class Irrigation tanks. During the year under report an expenditure of Rs. 9,372 was incurred on repairs to 5 tanks. The area irrigated during the year was 969 acres and the irrigation share of land revenue amounted to Rs. 2,150. The remissions granted during the year amounted to Rs. 840. The total direct and indirect receipts during the year under report were Rs. 4,396 against Rs. 5,894 for the previous year.

The work of constructing an Irrigation tank at Nandargi, taluka Indi (Minor Irrigation Works) was first started as a scarcity work in the year 1938 to provide work to the scarcity stricken people in the area. An expenditure of about Rs. 50,919 was incurred during the year under report against the revised estimated amount of Rs. 1,25,965. On the cessation of scarcity conditions, the work has been let out on contract in January 1939. The work has nearly been completed.

DHARWAR DIVISION.

There are about 2,931 second class Irrigation tanks. During the year under report an expenditure of Rs. 66,261 was incurred on repairs to about 206 tanks and a sum of Rs. 7,542 was spent on extensions and improvements, etc. The area irrigated during the year was 81,579 acres and the irrigation share of land revenue amounted to Rs. 1,94,665. The remissions granted during the year amounted to Rs. 25,463. The total direct and indirect receipts were Rs. 1,95,519 as compared with Rs. 1,63,695 for the previous year.

KANARA DIVISION.

In this Division there are about 184 second class Irrigation tanks. During the year, an expenditure of Rs. 20,566 was incurred on repairs to 93 tanks. In addition, a sum of Rs. 3,601 was spent on "surveying irrigation tanks and preparing projects for their improvements". The area irrigated during the year was 34,344 acres and the irrigation share of land revenue was Rs. 94,769 and the whole amount was actually realised during the year. The remissions granted during the year amounted to Rs. 3,063.

RATNAGIRI DIVISION.

There are only four tanks in this Division. The area irrigated was 1,374 acres and the irrigation share of land revenue was Rs. 7,645, the whole of which was realised during the year.

SECTION III.

RESEARCH WORK.

POONA IRRIGATION AND RESEARCH DIVISION.

In the Deccan, when a large perennial canal is opened, widespread water-logging is liable to ensue. Some of this water-logging dries out later, but the damage often extends rapidly into the valleys, and unless steps are taken to set matters right, the damage, consisting mainly of salt-efflorescence, becomes permanent. The seriousness of the menace was realised as early as 1888 and the controversy regarding the relative effect of channel losses and wasteful irrigation and the best methods to adopt to safeguard the land became yearly more acute. Various experiments were carried out at the instance of the Agricultural Department but by 1913 it was clear that all the methods tried so far had failed. It was eventually decided to open a Special Irrigation Division in order that the question of canal development, especially as regards safeguarding the soil, might form the subject of investigation. In June 1916, the Division (now called the Poona Irrigation and Research Division) was formed and the work entrusted to it was the contouring of the commanded areas, the carrying out of a careful survey and classification of the surface and sub-soil, the selection and marking out of definite areas suitable for "blocks" for perennial and other crops, the designing of the drainage works required, the indication of suitable lines of communication and centres for the establishment of crushing, grinding, and refining and other machinery for trade purposes and the study of the question of the reclamation of waste lands and areas damaged by water-logging and salt-efflorescence and the growth of useful timber in such tracts and along the main canal. In short, research and investigation into all the problems relating to irrigation by means of actual experiment has been the sphere of work of this Division.

The investigations coming within this sphere may be broadly grouped under four heads, viz. :—

(1) Irrigation management,

(2) Irrigation requirements or the inter-action of agricultural requirements and irrigation limitations,

(3) Soil physics of irrigated tracts,

(4) Drainage and reclamation.

The work done by this Division may be classified as under :—

(1) Sub-soil survey and observation of sub-soil water levels,

(2) Irrigation and blocks,

(3) Sub-soil drainage construction,

(4) Drainage schemes for allotted sugar factory areas,

(5) Irricultural research.

A brief account on the work done during the year under each of these heads is given below :—

(1) Sub-soil Survey and Observations of Sub-soil Water Levels.

The biennial observations of damage to lands on the Nira Right Bank Canal and Godavari Canals were completed. The damage on the Nira Right Bank Canal is practically constant and has a tendency to decrease on account of the drainage construction in factory areas while the damage on the Godavari Canals is on the increase due to increase in cane plantation. The work of preparing drainage projects in respect of sugar factories on the Godavari Canals is in progress. The work of damage classification on the Nira Left Bank Canal and Pravara Canals is in progress. In addition to above the work of surveying the 18″ and 8′ M. I. Bs. on the Nira Canals was done during the year under report. Safe limits of sugarcane areas to be allowed on the Nira Right Bank Canal were investigated and fixed.

(2) Irrigation and Blocks.

Individual inspection of lands as regards the drainage and the suitability of the soil for fruit-gardens for which applications were received were carried out during the year. Applications for exemption from the rule disallowing perennial irrigation within one-fourth mile limit of towns and villages were investigated.

(3) Sub-soil Drainage Construction.

Detailed observations were made in the areas served by the drainage schemes already constructed. The improvement in the condition of the damaged areas continues.

(4) Drainage Schemes for allotted Factory Areas.

Considerable progress was made in the projects for land drainage in the allotted sugar factory areas and plans and estimates for several projects of drainage schemes in respect of the various Sugar Factories on the Deccan Canals were prepared and the construction works of drainage Projects are in progress in various Sugar Factory areas during the year under report. A careful watch is being kept on the factory areas in many catchments in which full sugarcane concentration has been reached.

(5) Irricultural Research.

In the Hadapsar Effluent Experimental Area, field experiments were carried out with a view to finding out the best varieties of sugarcane

and the most suitable treatment and methods of cultivation of sugarcane manured by effluent. The question of the disposal of the increasing quantity of effluent by more concentrated and prolonged application and the effect on the soil of effluent manuring year after year was also under investigation. The effect of effluent on different types of soils was under investigation.

In the Baramati Experimental Salt Area, field experiments on soil reclamation after drainage based on the data from laboratory and plot scale experiments were carried out. Method of cultivation, fertilizers, green manures and sugarcane varieties suited to the process of reclamation were tested with satisfactory results. This research has wide application on the damaged areas on the Deccan Canals.

STATEMENTS I-E AND I-F

STATEMEN

Statement of Area irrigated by Irrigation Works in th

No.	Name of Work.	Area irrigated. Kharif.	Rabi.	Total.	Flow.	Lift.	Double cropped. Area irrigated.	Percentage of total area.
1	2	3	4	5	6	7	8	9
	WORKS FOR WHICH CAPITAL AND REVENUE ACCOUNTS ARE KEPT.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	
	PRODUCTIVE.							
	Southern Circle.							
1	Gadikeri Tank	*423	..	*423	*423	..	..	
2	Mavinkop Tank	*669	..	*669	*669	..	..	
	Central Circle.							
3	Ekruk Tank	**411**	**2,729**	**3,140**	3,527	15	..	
		484	3,058	3,542				
4	Shahada Channel	**420**	**499**	**919**	..	..	20	
		427	516	943	943			
		615	**366**	**981**	..			
		*679	*335	*1,014	*1,014			
	Total, Productive ..	911	3,574	4,485	4,470	15	20	
		*1,771	*335	*2,106	*2,106			
	UNPRODUCTIVE.							
	Northern Circle.							
5	Hathmati and Khari Cut Canal ..	23	20	43	38	5	..	
		..	..	..	..	..	..	
6	Wangroli Tank	933	..	933	880	53	..	
7	Savli Tank	725	..	725	711	14	..	
8	Sahiat Tank	583	..	583	581	2	..	
9	Tranza Nagramma Tanks	..	3	3	..	3	..	
10	Futelao Tank	40	49	89	89	..	..	
	Total, Unproductive (N. C.) ..	2,304	72	2,376	2,299	77	..	
	Deccan Irrigation Circle.							
11	Nira Left Bank Canal	**25,166**	**46,826**	67,435	67,173	262	345	
		34,340	33,095					
	Shetphal Tank	**2,924**	**3,950**	7,056	7,056	..	40	
		4,217	2,839					
12	Nira Right Bank Canal	**21,481**	**29,051**	45,459	45,363	96	14	
		19,769	25,690					

1-E.

Province of Bombay, during the year 1940-41.

Average Discharges, cubic feet per second.				Area irrigated per cubic foot per second.				Base to which the duties of water are calculated.	
At Head.		Utilized.		Discharged at Head.		Utilized.		Kharif	Rabi.
Kharif.	Rabi.	Kharif.	Rabi.	Kharif.	Rabi.	Kharif.	Rabi.		
10	11	12	13	14	15	16	17	18	19
				Acres.	Acres.	Acres.	Acres.		
..	..	..	..	..	..	..	..	15th February to 14th October.	15th October to 14th February.
..	..	..	..	..	..	..	..		
7·24	18·66	7·24	18·66	69	153	69	153	Do.	Do.
13·88	20·83	13·88	20·83	78	71	78	71	Do.	Do.
..	..	..	..	..	..	..	..		
H 25	..	12	..	1·9	..	0·5	..	15th June to 15th November.	16th November to 14th February.
K 3	..	..	..	..	..	..	..		
39·87	..	39 87	..	27·87	..	27·87	..	Do.	Do.
39·59	..	39·59	..	18·31	..	13·31	..	Do.	Do.
33·91	..	33·91	..	17·49	..	17·49	..	Do.	Do.
..	..	..	..	..	..	..	..	Do.	Do.
2·37	1·32	2·37	1·32	16·88	37·12	16·88	37·12	Do.	Do.
..	..	..	..	..	..	..	..		
403	436	(d) 351	(d) 407	62	107	(d) 72	(d) 115	15th February to 14th October.	15th October to 14th February.
26	32	26	32	113	123	113	123	Do.	Do.
379	381	285	301	(a)57	(a) 76	(a) 75	(a) 97	Do.	Do.

STATEMENT

No.	Name of Work.	Area irrigated. Kharif.	Rabi.	Total.	Flow.	Lift.	Double cropped. Area irrigated.	Percentage of total area.
1	2	3	4	5	6	7	8	9
		Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	
	WORKS FOR WHICH CAPITAL AND REVENUE ACCOUNTS ARE KEPT—*contd.*							
	UNPRODUCTIVE—*contd.*							
	Deccan Irrigation Circle—contd.							
13	Mutha Canals	**12,724** 13,102	**12,340** 2,767	15,869	15,727	142	70	..
	Matoba Tank (*c*)	**1,023** 1,044	**2,092** 1,918	2,962	2,962	..	..	..
14	Lake Beale—Darna Dam	**452** 452	**157** 157	609	..	609	..	..
	Godavari Right Bank Canal	**10,862** 18,604	**11,359** 4,610	23,214	23,123	91	628	2·71
	Godavari Left Bank Canal	**8,189** 12,478	**9,121** 2,067	14,545	12,589	1,956	541	3·72
15	Chankapur Tank—Girna Canal	**3,825** 7,072	**4,289** 4,821	11,893	11,888	5	..	..
16	Kadwa River Works — Palkhed Canal ..	**736** 933	**923** 710	1,643	1,623	20	1	..
	Kadwa River Works — Ojhar-Tambat Canal	**304** 418	**513** 435	853	853	..	5	..
	Kadwa River Works — Wadali Canal ..	**336** 413	**395** 169	582	582	..	1	..
17	Pravara Right Bank Canal	**8,374** 10,917	**7,340** 1,932	12,849	12,849	..	228	1·8
	Pravara Left Bank Canal	**32,603** 34,024	**28,726** 11,579	45,603	45,477	126	380	1·4
18	Bhatodi Tank (*c*)	**107** 132	**162** 198	330	330	..	..	..
19	Kasurdi Tank	.. ..	**9** 10	10	10	..	..	..
	Total Unproductive (D. I. C.) ..	1,57,915	92,997	2,50,912	2,47,605	3,307	2,253	..

I-E—*contd.*

Average Discharges, cubic feet per second.				Area irrigated per cubic foot per second.				Base to which the duties of water are calculated.	
At Head.		Utilized.		Discharged at Head.		Utilized.		Kharif.	Rabi.
Kharif.	Rabi.	Kharif.	Rabi.	Kharif.	Rabi.	Kharif.	Rabi.		
10	11	12	13	14	15	16	17	18	19
				Acres.	Acres.	Acres.	Acres.		
170	124	152	(*d*)113	75	99	84	109	15th February to 14th October.	15th October to 14th February.
7·6	15·6	7·6	15·6	135	134	135	134	Do.	Do.
..	..	..	..	..	..	..	..	Do.	Do.
228	244	228	244	48	47	48	47	Do.	Do
129	122	129	122	63	75	63	75	Do.	Do.
82	90	82	90	47	48	47	48	Do.	Do.
10	11	10	11	74	84	74	84	Do.	Do.
6	8	6	8	51	64	51	64	Do.	Do.
7	9	7	9	48	44	48	44	Do.	Do.
109	114·86	99·58	108·21	(*b*)77	(*b*)64	(*b*)84	(*b*)68	Do.	Do.
370·04	377·57	351·69	365·47	(*b*)88	(*b*)76	(*b*)93	(*b*)79	Do.	Do.
3	1·68	3	1·68	36	96	36	96	Do.	Do.
..	..	..	..	..	..	..	..	Do.	Do.
..	..	..	..	..	..	..	..		

STATEMENT

No.	Name of work.	Area irrigated.					Double cropped.	
		Kharif.	Rabi.	Total.	Flow.	Lift.	Area irrigated.	Percentage of total area.
1	2	3	4	5	6	7	8	9
		Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	
	WORKS FOR WHICH CAPITAL AND REVENUE ACCOUNTS ARE KEPT—*contd.*							
	UNPRODUCTIVE.							
	Central Circle.							
20	Shirsuphal Tank	**254** 277	**815** 851	**1,069** 1,128	1,128	..	..	..
21	Bhadalwadi Tank	**158** 158	**823** 880	**981** 1,038	1,038	..	..	..
22	Mhaswad Tank	**1,050** 1,147	**1,292** 1,392	**2,342** 2,539	2,433	106	..	..
23	Parsul Tank	**287** 300	**618** 629	**905** 929	929	..	..	..
24	Koregaon Tank	**..** ..	**245** 273	**245** 273	257	16	..	..
25	Ashti Tank	**441** 492	**2,833** 3,104	**3,274** 3,596	3,596	..	..	..
26	Pathri Tank	**..** ..	**596** 651	**596** 651	651	..	..	..
27	Jamda Canals	**415** 443	**871** 952	**1,286** 1,395	1,393	2	..	..
28	Hartala Canal	**..** ..	**41** 46	**41** 46	46	..	..	..
29	Mhaswa Tank	**68** 68	**292** 303	**360** 371	371	..	..	..
30	Lower Panjhra River Works	**265** 277 **1,157** *1,157	**853** 858 **120** *120	**1,118** 1,135 **1,277** *1,277	1,135 *1,277	..	23 +315 =338	14·11

I-E—contd.

Average Discharges, cubic feet per second.				Area irrigated per cubic foot per second.				Base to which the duties of water are calculated.	
At Head.		Utilized.		Discharged at Head.		Utilized.		Kharif.	Rabi.
Kharif.	Rabi.	Kharif.	Rabi.	Kharif.	Rabi.	Kharif.	Rabi.		
10	11	12	13	14	15	16	17	18	19
				Acres.	Acres.	Acres.	Acres.		
9·1	8·5	9·1	8·5	28	96	28	96	15th February to 14th October.	15th October to 14th February.
2·5	5·0	2·5	5·0	64	165	64	165	Do.	Do.
20·0	36·0	20·0	36·0	53	37	53	37	Do.	Do.
0·82	3·65	0·82	3·65	366	172	366	172	Do.	Do.
..	2·01	..	2·01	..	122	..	122	Do.	Do.
1·98	8·77	1·98	8·77	223	323	223	323	Do.	Do.
..	4·31	..	4·31	..	138	..	138	Do.	Do.
9·88	79·39	9·88	79·39	43	13	43	13	Do.	Do.
0·008	0·1048	0·008	0·1048	..	391	..	391	Do.	Do.
0·24	5·33	0·24	5·33	283	54	283	54	Do.	Do.
7·45	0·56	7·45	0·56	194	2,430	194	2,430	Do.	Do.

STATEMENT

No.	Name of work.	Area irrigated.					Double cropped.	
		Kharif.	Rabi.	Total.	Flow.	Lift.	Area irrigated.	Percentage of total area.
1	2	3	4	5	6	7	8	9
		Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	
	WORKS FOR WHICH CAPITAL AND REVENUE ACCOUNTS ARE KEPT—*contd.*							
	UNPRODUCTIVE—*contd.*							
	Central Circle.—contd.							
31	Krishna Canal	**3,433** 4,158	**2,378** 3,164	**5,811** 7,322	6,307	1,015	83	1·43
32	Revari Canal	**84** 106	**354** 404	**438** 510	509	1	7	1·59
33	Upper Man River Works	**148** 177	**855** 998	**1,003** 1,175	1,167	8	107	1·07
34	Yerla River Irrigation Works	**573** 685	**3,438** 3,937	**4,011** 4,622	4,579	43	301	7·5
35	Chikhli Canal	**258** 334	**13** 16	**271** 350	347	3	11	4·06
36	Maini Tank	**451** 519	**1,008** 1,171	**1,459** 1,690	1,671	19	..	..
	Unproductive Total (C-C) ..	9,141 *1,157	19,629 *120	28,770 *1,277	27,557	1,213	847	..
	Southern Circle.							
37	Gokak Canal, First Section	6,073	3,643	9,716	9,488	228	1,032	10·62
38	Muchkundi Tank	8	..	8	8	..	..	..
39	Dambal Tank	102 *144	67 ..	169 *144	169 *144	..	..	..
40	Medleri Tank	70	22	92	89	3	..	..

I-E—*contd.*

Average discharges, cubic feet per second.				Area irrigated per cubic foot per second.				Base to which the duties of water are calculated.	
At Head.		Utilized.		Discharged at Head.		Utilized.		Kharif.	Rabi.
Kharif.	Rabi.	Kharif.	Rabi.	Kharif.	Rabi.	Kharif.	Rabi.		
10	11	12	13	14	15	16	17	18	19
				Acres.	Acres.	Acres.	Acres.		
..	..	..	..						
52·04	66·71	52·04	66·71	82	84	82	84	15th February to 14th October.	15th October to 14th February.
0·83	2·40	0·83	2·40	104	184	104	184	Do.	Do.
0·87	5·09	0·87	5·09	182	174	182	174	Do.	Do.
5·80	21·76	5·80	21·76	109	172	109	172	Do.	Do.
0·84	0·31	0·84	0·31	340	271	340	271	Do.	Do.
7·2	5·6	7·2	5·6	64	189	64	189	Do.	Do.
..	..	..	..	..	..	..	..		
59·70	58·05	59·70	58·05	98·38	98·85	98·38	98·85	15th February to 14th October.	15th October to 14th February.
..	..	..	..	..	..	..	..	Do.	Do.
3·15	1·49	3·15	1·49	78·09	46·31	78·09	46·31	16th January to 15th October.	16th October to 15th January.
1·53	2·31	1·53	2·31	45·75	9·52	45·75	9·52	Do.	Do.

No.	Name of Work.	Area irrigated.					Double cropped.	
		Kharif.	Rabi.	Total.	Flow.	Lift.	Area irrigated.	Percentage of total area.
1	2	3	4	5	6	7	8	9
	WORKS FOR WHICH CAPITAL AND REVENUE ACCOUNTS ARE KEPT—*concld.*	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	
	UNPRODUCTIVE—*concld.*							
	Southern Circle—contd.							
41	Madag Tank	295	188	483	483	..	..	..
42	Asundi Tank	11 *8	153 *182	164 *190	160 *190	4	..	..
43	Dharma Canal	420 *8,648	.. ..	420 *8,648	420 *8,648	..	..	..
	Total, Unproductive (S. C.) ..	6,979 *8,800	4,073 *182	11,052 *8,982	10,817 *8,982	235	1,032	..
	Grand Total, Unproductive ..	1,76,339 *9,957	1,16,771 *302	2,93,110 *10,259	2,88,278	4,832	4,132	
	Grand Total, Productive and Unproductive ..	1,77,250 *11,728	1,20,345 *637	2,97,595 *12,365	2,92,748	4,847	4,152	..

Note.—The bold figures in brackets represent areas actually irrigated during the respective seasons and the duties have irrigated. To obtain correct duties therefore these crops have to be added to the rabi areas.

(*a*) Low duties on the Nira Right Bank Canal are due to scattered nature of irrigation.

(*b*) The duties on the Pravara canals are low due to high proportion of sugarcane and other perennial crops.

(*c*) There is generally no supply in the Matoba and Bhatodi tanks in the hot weather season. Even during the of days on which the channels were in flow has therefore been taken for purpose of calculating average discharge and

(*d*) The difference between the discharge at head and utilized in respect of the Nira Left Bank Canal was due Pravara Canals and the Mutha Canals it was due to water having run to waste through escapes, etc.

* Area under consolidated assessment.

I-E—*concld.*

Average Discharges, cubic feet per second.				Area irrigated per cubic foot per second.				Base to which the duties of water are calculated.	
At Head.		Utilized.		Discharged at Head.		Utilized.		Kharif.	Rabi.
Kharif.	Rabi.	Kharif.	Rabi.	Kharif.	Rabi.	Kharif.	Rabi.		
10	11	12	13	14	15	16	17	18	19
				Acres.	Acres.	Acres.	Acres.		
2·31	5·82	2·31	5·82	127·10	32·30	127·10	32·30	16th January to 15th October.	16th October to 15th January.
2·99	4·15	2·99	4·15	5·16	80·73	5·16	80·73	Do.	Do.
42·49	14·14	42·49	14·14	213·41	..	213·41	..	Do.	Do.
..	..	..	..	..	..	..	..		
..	..	..	..	..	..	..	..		
..	..	..	..	..	..	..	..		

been calculated on these figures. In the rabi season in addition to pure rabi crops, perennial and eight months, crops are

monsoon and rabi seasons the channels are closed for days together due to rainfall and other causes. The actual number duties.

to water having been let into the Shetphal Tank and run to waste through scouring sluices. In regard to the

STATEMENT I-F.

Statement showing water-rates per acre in force during 1940-41 on Irrigation Works in the Province of Bombay.

No.	Name of Work.	Water-rates. Irrigation in blocks.	Perennial.	Two Seasonal.	Monsoon, four months.	Rabi, four months.	Hot weather.	Miscellaneous.	Single watering. (Post Seasonal).	Occupier's rate.	Owner's rate.	Water advantage.
	Works for which Capital and Revenue Accounts are kept.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.			
	PRODUCTIVE.											
	Southern Circle.											
1	Gadikeri Tank* ..	..	..	..	..	..	..	..	..			
2	Mavinkop Tank* ..	..	..	..	..	..	..	..	..			
	Central Circle.											
3	Ekruk Tank a ..	..	A 35 B 17½	8	3	5	7	..	2	*Nil.*	*Nil.*	*Nil.*
4	Shahada Channel a ..	..	A 28 B 14	8	3	5	6	..	2			
	UNPRODUCTIVE.											
	Northern Circle.											
5	Hathmati Canal a[1] ..	..	(*b*[3])	..	D 3 E 1	3	6	..	2			
	Khari Cut Canal a[1] ..	..	(*b*[3])	..	D 5 E 1	5	6	..	1 **2			
6	Wangroli Tank a[2] ..	..	(*b*[3])	6½	D 5 E 2½	4	6	..	1½			
7	Savli Tank a[2] ..	..	(*b*[3])	8	D 5 E 4	4	6	..	1½			
8	Saiat Tank a[2] ..	..	(*b*[3])	6½	D 4 E 2½	4	6	..	1½			
9	Tranza Nagrama Tanks a[2]	..	(*b*[3])	6	D 4 E 2	4	6	..	1			
10	Futelao Tank a[2] ..	..	(*b*[3])	4	D 4 E 2	a[4] 3 a[5] 2	5	..	a[6] 1	*Nil.*	*Nil.*	*Nil.*
	Deccan Irrigation Circle.											
11	Nira Left Bank Canal. Shetphal Tank (*d*) ..	§19 ¶16	M 45 C 66 B 22½	8	3	5	7		(*e*) 2			
12	Nira Right Bank Canal (*d*).	§19 ¶16	M 45 C 66 B 22½	8	3	5	7		(*e*) 2			

STATEMENT I-F—*contd.*

No.	Name of Work.	Water-rates. Irrigation in blocks.	Perennial.	Two Seasonal.	Monsoon, four months.	Rabi, four months.	Hot weather.	Miscellaneous.	Single watering. (Post Seasonal).	Occupier's rate.	Owner's rate.	Water advantage.
		Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.			
	Works for which Capital and Revenue Accounts are kept— contd.											
	UNPRODUCTIVE—*contd.*											
	Deccan Irrigation Circle—contd.											
13	Mutha Canals and Matoba Tank (*d*)—											
	Sugarcane under the Mutha Canals within the Poona City and Suburban Municipal and Cantonment limits or within one mile of those limits.	..	50									
	On all remaining land commanded by both the canals.	..	M 45	8	3	5	7	..	(*e*) 2	*Nil.*	*Nil.*	*Nil.*
	Pan gardens ..	..	C 66									
	Perennial crops other than sugarcane and pan gardens.	..	B 22½									
	Pomegranates ..	..	15									
	Matoba Tank ..	..	(*f*)									
14	Godavari Right Bank Canal (*d*). Godavari Left Bank Canal (*d*).	§19	M 45 C 66 B 22½	8	3	5	7	..	(*e*) 2			
15	Chankapur Tank—Girna Canal (*d*) ..	..	X	8	3	5	6	..	(*e*) 2			
16	Kadwa River Works (*d*)—											
	Waghad Tank ..	..										
	Palkhed Canal ..	..	X	8	3	5	6	..	(*e*) 2	*Nil.*	*Nil.*	*Nil.*
	Ojhar-Tambat Canal ..	..										
	Wadali Canal ..	..										

STATEMENT I-F—*contd.*

No.	Name of Work.	Water-rates. Irrigation in blocks.	Perennial.	Two Seasonal.	Monsoon, four months.	Rabi, four months.	Hot weather.	Miscellaneous.	Single watering. Post Seasonal.	Occupier's rate.	Owner's rate.	Water advantage.
	Works for which Capital and Revenue Accounts are kept— contd.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.			
	UNPRODUCTIVE—*contd.* *Deccan Irrigation Circle*—concld.											
17	Pravara Canals (*d*) ..	§19	M 45 C 66 B 22½	8	3	5	7	..	(*e*) 2			
18	Bhatodi Tank (*d*) ..	..	X	8	3	5	6	..	(*e*) 2	*Nil.*	*Nil.*	*Nil.*
19	Kasurdi Tank (*d*) ..	..	X	8	3	5	6	..	(*e*) 2			
	Central Circle.											
20	Shirsuphal Tank (*d*) ..	..	X	8	3	5	6	..	(*e*) 2	*Nil.*	*Nil.*	*Nil.*
21	Bhadalvadi Tank (*d*) ..	..										
22	Parsul Tank *a* ..	..	A 28 B 14	8	3	5	6	..	(*e*) 2			
23	Koregaon Tank a ..	..										
24	Ashti Tank a ..	..										
25	Pathri Tank a ..	..										
26	Mhaswad Tank *a* ..	..										
27	Jamda Canals a ..	..	A 28 B 13	7	3	4	6	..	(*e*) 2			
28	Hartala Tank a ..	..	A 12 B 9	5	2	3	4	..	(*e*) 1			
29	Mhaswa Tank a ..	..										
30	Lower Panjhra River Works a	..	A 28 B 14	8	3	5	6		(*e*) 2			
31	Krishna Canal a ..	..	A 32 B 16	8	3	5	8	..	(*e*) 2			
32	Revari Canal a ..	..	A 28 B 14	8	3	5	6	..	(*e*) 2			
33	Upper Man River Works a	..	A 28 B 14	8	3	5	6	..	(*e*) 2	*Nil.*	*Nil.*	*Nil.*
34	Yerla River Irrigation Works a	..	A 28 B 14	8	3	5	6	..	(*e*) 2			
35	Chikhli Canal a ..	..	A 28 B 14	8	3	5	6	..	(*e*) 2			
36	Maini Tank a ..	..	A 28 B 14	8	3	5	6	..	(*e*) 2			

STATEMENT I-F—*concld.*

No.	Name of Work.	Water-rates.										
		Irrigation in blocks.	Perennial.	Two Seasonal.	Monsoon, four months.	Rabi, four months.	Hot weather.	Miscellaneous.	Single watering. (Post Seasonal)	Occupier's rate.	Owner's rate.	Water advantage.
	Works for which Capital and Revenue Accounts are kept—concld.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.			
	UNPRODUCTIVE—*concld.*											
	Southern Circle.											
37	Gokak Canal, 1st Section and Storage Works (*u*)	..	(b^1) 27½ (b^2) 20 (a^7)	8	3 (a^8)	5	15	..	2	*Nil.*	*Nil.*	*Nil.*
38	Muchkundi Tank (*s*) ..	..	(b^1) 10 (b^2) 5		2	2	5	..	1			
39	Dambal Tank (*w*) ..	..	(*x*) 14	(*y*) 6 (*z*) 7½	(*m*) 4	(*n*) 4½	(*l*) 7	..	(*j*) 1 (*k*) 2			
40	Medleri Tank (*w*) ..	..	(*x*) 14	(*y*) 6 (*z*) 7½	(*m*) 4	(*n*) 4½	(*l*) 7	..	(*j*) 1 (*k*) 2			
41	Madag Tank (*w*) ..	..	(*x*) 12	(*y*) 6 (*z*) 7½	(*m*) 4	(*n*) 4½	(*l*) 7	..	(*j*) 1 (*k*) 2			
42	Asundi Tank (*w*) ..	..	(*x*) 14	(*y*) 6 (*z*) 7½	(*m*) 4	(*n*) 4½	(*l*) 7	..	(*j*) 1 (*k*) 2			
43	Dharma Canal (a^9) ..	..	..	..	(*o*) 4½	..	..	..	(*j*) 1 (*k*) 2			

NOTE.—(1) For lift irrigation in the Deccan Irrigation Circle the orders contained in G. R. No. 4771/27, dated 23rd December 1931, are that lift from Budkis should not be allowed at all in areas under the flow command of a canal and that in other areas it may be allowed only when the supply of water for irrigation is in excess of the demand at half the flow rates for all crops if water is taken by mot and 3/4th if it is taken by power pumps.

(2) For lift irrigation half the ordinary rates are charged in other circles.

(3) Double or treble the ordinary rates are charged as penal rates for taking water without permission.

(4) Leakage or percolation rates are the same as ordinary rates.

(5) Water-rates for non-irrigational purposes are charged at the rates sanctioned by Government in each case.

(6) Preseasonal waterings are allowed at the rate of Rs. 4 per acre. Such waterings should commence in every case not earlier than 1st May.

(7) A reserve rate of Rs. 3 per acre as a minimum rate has been sanctioned for lands let out for cultivation in the basin of Lake Beale—*vide* G. R. No. 2484, dated 12th June 1925.

(8) A flat rate of Rs. 2-8-0 per acre of culturable area has been sanctioned for the supply of water from the irrigation channel of Sangvi village near Bhatgar—*vide* G. R. No. 1849/27, dated 5th January 1932.

(9) The supply of water to roadside trees, etc., is charged as follows :—
Rs. 5 per 100 Nos. per annum.

Monsoon season	Re. 1 0 0	per 100 Nos.
Rabi season	Rs. 1 8 0	do.
Hot-weather season	Rs. 2 8 0	do.

(10) Short terms cane and other perennials are charged in accordance with the scales laid down in G. R. Nos. 8670, dated 13th January 1927 and 3098/27, dated 6th November 1929 and 5602/27, dated 4th December 1935.

* Lands wholly assessed at consolidated rates.

§ Block rate for blocks in 1 : 3 proportion of sugarcane.

¶ Block rate for blocks in 1 : 4 proportion of usgarcane.

** For single watering for crops for which no application for irrigation throughout the season was received.

A—For sugarcane and pan gardens.

B—For perennial crops other than sugarcane.

C—For pan gardens for the whole year. If water is given for part of the year the charge will be on the basis of thrice the medium seasonal rates for the seasons concerned—*vide* G. R. No. 5602/27, dated 9th December 1931.

D—For rice.

E—For crops other than rice.

M—For sugarcane.

X—For sugarcane and pan gardens double the seasonal rates and for other perennial crops single seasonal rate shall be charged.

(*d*) Rates sanctioned in G.R No. 2488/36, dated 23rd March 1939 and G. M. No. 929/36-1, dated 3rd August 1939. Rates sanctioned in G. R. No. 929/36 of 1st March 1940 to be in force up to 14th February 1943—*vide* G. M No. 929/36-1, dated the 23rd April 1940.

(*e*) The single-watering rate applies to one post-seasonal watering to a sanctioned crop. If more than one such watering is taken, the full seasonal rates will be charged unless specifically ordered otherwise. No post seasonal watering is allowable to Monsoon crops, if water is required, the crop shall be assessed as two seasonal one.

(*f*) For sugarcane the short-term cane rates as per scale sanctioned in G. R. No. 8670, dated 13th January 1927 (which may be in force on major irrigation works), for pan gardens the same rate as on the Mutha Canals and for other perennials single medium seasonal rates will be charged—*vide* G. R. No. 5602/27, dated 9th December 1931.

(*j*) From 15th June to 14th October.

(*k*) From 15th October to 14th June.

(*l*) From 15th February to 14th June.

(*m*) From 15th June to 14th October or 15th July to 30th November.

(*n*) From 15th October to 14th February.

(*o*) For four months from 15th June to 15th October or 15th July to 15th November.

(*s*) In force up to 15th February 1942—*vide* G. R. No. 5459/27, dated 29th January 1936.

(*u*) In force up to 14th February 1943—*vide* G. R. No. 1604/36, dated 3rd January 1940 and G. M. No. 1604/36-1, dated 19th April 1940.

(*w*) Rates sanctioned in G. R. No. 3994/36, dated 18th November 1939 to be in force up to 14th February 1945.

(*x*) For sugarcane, betel leaves, etc., for 12 months.

(*y*) For eight months from 15th June to 14th February.

(*z*) For eight months from 15th October to 14th June or 1st August to 31st March.

a Rates to be in force up to 14th February 1943—*vide* G. R. No. 929/36, dated 20th January 1940, and G. M. No. 929/36, dated 23rd April 1940.

a^1 Rates sanctioned in G. R. No. 5956/27, dated 26th May 1936 to be in force up to 14th February 1942.

a^2 Rates continued up to 14th February 1943—*vide* G. R. No. 3494/36, dated 15th February 1940 and G. M. No. 3494/36-1, dated 23rd April 1940.

a^3 Rates to be in force up to 31st July 1943—*vide* G. R. No. 2704/36, dated 23rd November 1938.

a^4 For ordinary rabi.

a^5 For restorative crops grown after rice.

a^6 In either kharif or rabi season.

a^7 In the case of pomegranates (perennial eight months), if water is supplied during the period from 15th June to 31st December it should be charged for at the rate of Rs. 8 per acre.

a^8 When " San " is grown along with Maize the water rate for this mixed crop for the monsoon season should be Rs. 2 per acre. When " San " is grown for manurial purposes only the water rate therefor should be Re. 1 per acre. Tur, when shown as a mixed crop with any kharif crop in the monsoon season, shall be charged the monsoon season rate *plus* the single watering rate for post seasonal waterings that may be required in the cold weather season. These concessional rates to continue until further orders, *vide*, G. R. No. 1604/36, dated 3rd January 1940.

a^9 Rates sanctioned in G. R. No. 293/27 of 29th January 1936, are to be in force up to 31st March 1942.

(b^1) Rate for perennial 12 months.

(b^2) Rate for perennial 8 months from 15th June to 14th February.

(b^3) Single seasonal rates are charged—*vide* G. R. No. 3343/27, dated 8th October 1929.

Statement showing expenditure on establishment in the Roads and Buildings and the Irrigation Branches of the P. W. D. from the year 1921-22 to 1940-41 and the percentage on the total outlay on works and repairs during that period in both the Branches.

Statement showing expenditure on establishment in the Roads and Buildings a
on the total outlay on works and repai

Year.		Expenditure on Establishment in th						
	50—Civil Works—Provincial.	81—Civil Works.	50—Civil Works—Central.	8—Military Works.	Deposit Works.	Total Establishment charges.	Percentage on the total outlay on works and repairs in the Roads and Buildings Branch.	68—Construction of Irrigation, Navigation, Embankment and Drainage Works
1	2	3	4	5	6	7	8	9
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.		Rs.
1921-22 ..	29,06,955	..	1,98,683	45,258	2,84,992	34,35,888	19·26	11,53,7[illegible]
1922-23 ..	20,14,640	8,34,450	1,78,163	71,481	77,143	31,75,877	20·79	14,20,2[illegible]
1923-24 ..	15,84,488	8,10,645	67,892	38,560	6,88,354	31,89,939	19·88	21,87,7[illegible]
1924-25 ..	16,89,892	12,25,632	1,19,721	27,862	2,52,556	33,15,663	19·67	29,10,7[illegible]
1925-26 ..	18,89,417	12,05,078	1,01,876	69,049	2,58,535	35,23,955	20·66	32,21,6[illegible]
1926-27 ..	25,30,286	5,97,486	1,68,896	5,882	3,94,389	36,96,939	23·76	35,56,9[illegible]
1927-28 ..	21,99,448	5,59,107	1,49,132	5,042	2,97,270	32,09,999	24·96	36,98,9[illegible]
1928-29 ..	22,40,393	6,56,713	2,29,540	2,240	2,56,180	33,85,066	25·03	39,04,6[illegible]
1929-30 ..	22,45,450	7,33,867	1,56,773	3,638	2,34,897	33,74,625	25·26	42,26,5[illegible]
1930-31 ..	25,51,711	1,80,139	1,72,163	2,415	85,444	29,91,872	32·35	42,88,9[illegible]
1931-32 ..	25,93,104	2,32,929	1,22,799	3,182	44,132	29,96,146	38·70	40,37,9[illegible]
1932-33 ..	23,74,603	71,981	85,143	3,334	17,156	25,52,217	39·79	28,70,4[illegible]
1933-34 ..	22,73,945	31,807	71,866	3,810	30,502	24,11,930	37·97	17,60,0[illegible]
1934-35 ..	21,88,729	38,278	62,472	2,693	47,694	23,39,866	35·82	15,36,5[illegible]
1935-36 ..	20,51,807	808	89,984	1,539	54,593	21,98,731	35·75	1,37,3[illegible]
1936-37 ..	23,14,593	619	61,859	1,124	57,679	24,35,874	31·66	74,0[illegible]
1937-38 ..	22,61,828	699	58,352	998	47,319	23,47,689	24·46	68,6[illegible]
1938-39 ..	20,85,355	..	10,113	769	65,701	21,61,938	25·28	53,5[illegible]
1939-40 ..	19,38,566	..	17,245 —11,702*	810 547*	63,725	20,09,191	23·37	37,3[illegible]
1940-41 ..	17,79,944	66,927	..	..	79,566	19,26,437	22·98	52,9[illegible]

*Represents the difference between the Establishment charges debited on the basis of estimated figures and those

NOTE.—The percentage of the establishment charges on the cost of works and repairs in the Irrigation Bra establishment charges in the Irrigation Branch include the cost of Special Revenue Establishment employed ent and that these charges also include cost of part of the time of Irrigation establishment spent on revenue managem to execution of works and repairs. If these establishment charges debited in the accounts to "revenue managem repairs will not be so divergent. The increase in the rate per cent. in the R. & B. Branch is mainly due to decrea works is reduced. A mere overall percentage on expenditure on works is inaccurate.

The figures from the year 1921-22 to 1934-35 pertain both to the Province of Bombay and Sind.

the Irrigation Branches of the P. W. D. from the year 1921-22 *to* 1940-41 *and the percentage during that period in both the Branches.*

Roads and Buildings Branch.

XVII—Works for which capital accounts are kept.	18—Other Revenue Expenditure financed from Ordinary Revenue.	XLI—Receipts from Electricity schemes—Hydro-Electric Scheme.	53—Capital Outlay on Electricity schemes—Hydro-Electric Schemes.	Deposit Works.	Total Establishment charges.	Percentage on the total outlay on works and repairs in the Irrigation Branch.	Total Establishment charges in the Roads and Buildings and Irrigation Branches.	Percentage on the total outlay of works and repairs in Roads and Buildings and Irrigation Branches.
10	11	12	13	14	15	16	17	18
Rs.	Rs.			Rs.	Rs.		Rs.	
13,85,960	6,68,651	....	....	2,770	32,11,115	33·59	66,47,003	24·26
13,44,901	5,34,327	....	....	1,993	33,01,972	32·22	64,77,849	25·38
14,43,222	4,32,013	....	....	2,056	40,65,084	33·89	72,55,023	25·87
17,37,724	5,26,361	....	....	492	51,75,362	28·73	84,91,025	24·35
17,99,343	5,19,228	....	....	2,681	55,42,899	21·62	90,66,854	21·23
18,08,385	5,94,989	....	....	3,207	59,63,540	30·56	96,60,479	27·54
19,20,773	7,80,312	....	....	3,847	64,03,888	26·00	96,13,887	25·64
21,35,939	6,16,601	....	....	2,750	66,59,960	25·51	1,00,45,026	25·35
21,08,302	6,18,312	....	....	1,012	69,54,499	23·26	1,03,29,124	23·88
18,31,149	5,99,621	....	....	1,734	67,21,470	21·60	97,13,342	24·06
16,34,011	5,18,627	....	....	86	61,90,696	22·40	91,86,842	25·97
23,53,971	4,01,329	....	....	680	56,26,407	28·54	81,78,624	31·30
29,83,531	5,14,407	....	....	48,960	53,06,988	40·41	77,18,918	39·61
30,98,255	4,55,037	....	....	441	50,90,563	42·89	74,30,429	40·38
8,66,476	1,73,501	....	....	61	11,77,339	89·46	33,76,070	45·21
8,24,868	1,63,507	....	....	620	10,63,016	83·73	34,98,890	39·04
7,70,784	1,27,039	....	....	73	9,66,575	82·27	33,14,264	30·77
8,22,086	1,39,881	....	....	..	10,15,889	92·85	31,77,827	32·95
7,77,209	1,14,778	1,442	89,598	317	10,20,686	82·62	30,29,877	30·82
7,96,162	43,795	3,749	4,452	1,109	9,02,236	107·88	28,28,673	30·08

The basis of actuals to end of March final kept under suspense.

(column 16) is generally higher than that in the Roads and Buildings Branch (column 8). The reason is largely that the, on "revenue management" work on certain canal systems which has no connection with the execution of works and repairs including the *control and distribution of water*, which is debited in the accounts to "revenue management" and not are deducted from the total cost of establishment in the irrigation Branch the percentage on the cost of works and outlay on "works" and "repairs". Establishment charges cannot be reduced in the same ratio in which expenditure on

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